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THE SOUTHEAST ASIAN REGIONAL CENTER FOR GRADUATE STUDY AND RESEARCH IN AGRICULTURE

Convened by the Regional Center Office

Manila, Philippines • February 7-10, 1972

SOUTHEAST ASIAN REGIONAL CENTER
FOR
GRADUATE STUDY AND RESEARCH IN AGRICULTURE

SEMINAR

Convened by the Regional Center Office

PROCEEDINGS

Manila, Philippines February 7 - 10, 1972

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PROGRAM OF ACTIVITIES

MONDAY, February 7 - Professor J. D. Drilon Jr
Chairman of the Day

8:00 a.m. . . . . Registration

8:30 a.m. . . . . Opening Session

Remarks:

Prof. Jose D. Drilon Jr.
Director, SEARCA

Dr. Leonardo A. Paulino
Director
Bureau of Agricultural Economics

Dr. Domingo M. Lantican
Chairman, Academic Consultative Committee

9:00 a.m. . . . . "The Seed of Progress"
"The Los Baños Story"

10:00 a.m. . . . . Coffee/Tea Break

10:15 a.m. . . . . SEAMEO Projects: Self-Evaluation Guideposts by Dr. Philip G. Davidson, Ford Foundation Consultant to SEAMES, Mr. Khoo Eng Choon, SEAMES Assistant Director for Programme

12:00 noon . . . . LUNCH

2:00 p.m. . . . . Country Statements

Indonesia
Khmer Republic
Laos
Malaysia
Philippines
Thailand
Vietnam

(Note: Coffee/Tea to be served).

X √

TUESDAY, February 8 - Dr. Kamol Janlekha, Chairman of the Day

8:30 a.m.	Regionalization of Higher Education in Agriculture by Dr. Fernando A. Bernardo, Director of Graduate Studies, UP at Los Baños (Note: Coffee/Tea to be served)
10:00 a.m.	Regionalization of Agricultural and Related Research by Dr. Marcos R. Vega, Director of Research, UP College of Agriculture
11:00 a.m.	Regionalization of Agricultural and Related Extension Work by Dr. Tito E. Contado, Director of Extension Education, UP College of Agriculture
12:15 p.m.	LUNCH
2:00 p.m.	Open Discussion on Country Statements in relation to papers on higher education, research and extension

Discussion Panel:

Higher Education - Dr. E. B. Oyer
Research - Dr. D. S. Athwal
Extension - Dr. O. F. Sison

WEDNESDAY, February 9 - Dr. D. M. Lantican, Chairman of the Day

7:00 a.m.	Departure for Los Baños
9:00 a.m.	Visit with The International Rice Research Institute (IRRI)
9:30 a.m.	Visit with the Rodent Research Center (RRC)
10:00 a.m.	Proceed to Construction Area (Coffee/Tea at the Janlekhas)
10:45 a.m.	Visit to FORPRIDECOM and UPCF

11:30 a.m. . . . . . Visit DTRI

12:15 p.m. . . . . . LUNCH at the Los Baños Union

1:45 p.m. . . . . . Briefings at Operations Room

Engineering
Animal Science
Communications
Economics
Entomology
Plant Pathology
Botany
Education
ACCI
Agronomy
Soils
Chemistry-Food Science

5:00 p.m. . . . . . Departure for Manila

8:00 p.m. . . . . . DINNER at Sulo, Makati

THURSDAY, February 10 - Dr. Gil F. Saguiguit, Chairman of the Day

9:00 a.m. . . . . . Project Reports

12:00 noon . . . . LUNCH - Presentation of Plaque of Recognition to General Netr

2:00 p.m. . . . . . Summing-up

FRIDAY, February 11 -

9:00 a.m. . . . . . Meeting of the Agricultural Governing Board (in camera)
Other participants - free; they may have a tour of the Greater Manila Area

12:00 noon . . . . LUNCH

2:00 p.m. . . . . . Members of the Agricultural Governing Board may have a tour of the Greater Manila Area

All other delegates - free time

SATURDAY, February 12 - Departure of Delegates

# # #

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# # #

FOREWORD

The seminar was undertaken primarily for two purposes: (1) To get together the members of the Agricultural Governing Board of SEARCA, the active agricultural leaders of member countries and other invited resource persons to present and discuss the agricultural situation in member countries, and to identify problems and needs in high-level manpower training, research and extension and related activities in agriculture in the region, and (2) To make first-hand observation of the human and physical resources and capabilities of SEARCA and the UP College of Agriculture (the host institution to SEARCA), in pursuing the regional programs and projects that are being or to be undertaken by the former.

The seminar opened with a discussion on the self evaluation of SEARCA, an undertaking which is to be reported on by June 30, 1972.

There were no conclusions reached during the seminar. This volume is a compilation of the papers presented and a record of the discussions, and serves to provide the guideposts for "SEARCA in the Seventies".

# # #

THE DIRECTOR'S OPENING REMARKS[1]

Members of the Agricultural Governing Board, country delegates, and other participants in this seminar:

First of all, I would like to welcome you all to this simple but historic event - historic because this is the first seminar being held to reassess SEARCA's activities and help determine those which SEARCA should undertake. Much of the future of SEARCA as a contributor to the well-being of the peoples of Southeast Asia would depend on what happens here in the next few days.

The task of SEARCA has become rather complex. For today, technology is making great strides, modifying and complicating production and marketing systems of agricultural economies in this part of the world, and changing the requirements for developing these economies.

There are other basic facts which attest to this complexity and raise certain issues relevant to the central purpose of this seminar. Let me cite a few of them.

As development tools, education and research are slow processes although they can be hastened through the choice of the right objectives and by increasing organizational capability for achieving the objectives. Most often, however, choosing desirable objectives and improving organizational capability are elusive things, particularly in economies which sit at relatively low benchmarks. How then should the right objectives be chosen and organizational capability raised to effective levels?

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[1] Delivered by Director J. D. Drilon Jr.

Experience has shown that agricultural development occurs over a long time horizon. Japan took a hundred years to transform its feudal agriculture to a modern one. It took the United States about the same time to attain such a transformation. Are there ways of crushing and shortening the time horizon for Southeast Asian countries?

Development brings about prosperity as well as problems. For example, while the contribution of the agricultural sector to the Gross National Market and per capita income increases, problem areas such as employment, income distribution and the gap between the rich and the poor. These same problems beset advanced economies. But in the less developed countries, these problems are more acute and call for a greater sense of urgency. They breed discontent and misery and pose the threat of upheavals. How can development be balanced so that overall progress can be achieved and at the same time social and economic disparities minimized?

In Southeast Asia, we see nationalism as a logical vehicle for national development and yet we are aware that national progress in isolation is to a great extent not possible without regional collaboration in a region of interacting nations. In education and research, disparities in existing and potential situations obtaining in Southeast Asian countries offer both opportunity and challenge at different levels. How can nationalism be tempered and harnessed by regional collaboration in education and research so that national responsibilities can be enhanced and not prejudiced? Since the development requirements of Southeast Asian countries are different, which ones are the most appropriate for SEARCA to choose as areas in which it can play meaningful roles in terms of the interest of the country concerned and of the region?

And what might be the end products of this seminar?

Obviously, these should not be predicted but proceeding from the purpose of the seminar and to oversimplify, I would say that some of them should be indications of directions that would serve as basis for the formulation of a dynamic strategy for SEARCA to follow so that its member countries can more fully participate in its activities with increasing interests and, thereby, really benefit from them.

Thank you.

# # #

REMARKS[2]

Director Drilon, Co-members of the Board and distinguished delegates from the member countries of SEARCA, Dean Lantican, Dean Orillo, distinguished guests, and friends:

I have the privilege of being requested to perform the honored role of our Chairman, Tan Sri Mohamad bin Jamil, who is unable to join us in this gathering.

In behalf of Chairman bin Jamil, I wish to welcome you all to the opening of the joint Eleventh Meeting and Seminar of the Agricultural Governing Board of the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), one of the projects of SEAMEO. If I may also take this opportunity, as my country's representative to the Board, I would like to extend to you, especially to my co-members from Indonesia, Royal Kingdom of Laos, Malaysia, Thailand, and Vietnam, our sincere welcome to the Philippines. A very special welcome also goes to the representative from the Khmer Republic who has joined us for the first time.

We are all aware of the importance of this meeting-seminar to SEARCA. As envisioned, the discussions that would take place within the next several days regarding the problems of agriculture in this part of the world, will set the guideposts on charting the course of the SEARCA program for the next five years. Convened in the host country of this SEAMEO project, the meeting will enable the representatives of the member states to have a close look of the project and view its status after two years of its current five-year funding program.

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[2] Delivered by Dr. Leonardo A. Paulino, member, AGB, in behalf of Chairman Tan Sri Mohamad bin Jamil.

We are also gathered together fully aware of the many serious problems brought to bear on developing nations like ours by the rapidly increasing world population. While it is true that measures are being undertaken to reduce the rate of increase, absolute increase is inevitable and the consequent problems of food and nutrition, unemployment, mass education, peace and order, and others have to be faced. To us in the agricultural field the problem is even more pronounced. For we are given the task of getting more and more output from less and less agricultural land. And from this meeting, we hope to find some answers that are addressed to the countries in this region.

It is our sincere wish that the participants of this joint meeting-seminar will find their stay here useful and fruitful.

Thank you.

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REMARKS[3]

It is a pleasure for me as Chairman of the Academic Consultative Committee to welcome the members of the Governing Board of SEARCA and all those present here today. We are happy that you are able to spend some time in the Philippines and give us the opportunity to inform you of our academic, research and extension programs and to show you our existing facilities and those that we are putting up to enable us to carry through the aims and objectives which SEARCA has entrusted us to implement.

The University of the Philippines at Los Baños is honored and thankful for having been chosen as the site of the Southeast Asian Regional Center for Graduate Study and Research in Agriculture. We take this recognition as a reward of our efforts and dedication to the advancement of tropical agriculture in this part of the world. We acknowledge the fact that the SEARCA program is a mutual give and take affair. While we share our resources the University benefits from the enriching experience and in learning from the participants the problems and needs of their respective country and the region. They provide us with valuable information which guides us in the formulation of criteria for curriculum and research development geared towards the needs of Southeast Asia thus making the University of the Philippines at Los Baños a true regional center.

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[3] Delivered by Dr. Domingo M. Lantican, Chairman of the Academic Consultative Committee.

We wish to assure you that we appreciate and feel gratified that we are able to help our neighbor countries in Southeast Asia in the development of the human resources and technology. These should enable the region to utilize its natural resources and improve the living conditions of her people. We believe that the human element is the key to progress for without it, physical and material investments in any enterprise will be wasteful and our natural resources cannot be expected to yield their maximum potential.

Our facilities are adequate and our staff are well trained. We are aware of the radical changes that have occurred in education in recent years and we believe that we are able to keep up with the changes and the ever increasing demands on the University of the Philippines at Los Baños as an academic institution. Our curricula and programs are under constant review and adjustment. We are confident that we are producing men and women with the right attitude and training that will enable them to fit successfully into the social and economic structure of the rapidly changing rural communities of Asia and keep themselves abreast with the dynamic sphere within which they have to practice their profession.

Our development plans call for the expansion of facilities and disciplines. Information and knowledge accumulated over the last six decades will be more accessible with the completion of our documentation center and data bank for agriculture and forestry. New institutions will rise on campus and a College of Basic Sciences and Humanities will be the forerunner of this development. Our regional experience sparked by SEARCA and other projects and our exposure to international forums will provide the basis for long-term future measures and integrated programs of action. The University of the Philippines at Los Baños during the seventies will be characterized by new focus and purpose aimed at a more intensified participation in national and regional development.

The whole of Southeast Asia is experiencing revolutionary, social, economic and technological changes which nations, because of their proximity and increasing interdependence with each other, cannot likely face alone. Our resources are scarce and it is through international cooperation that we can ensure that our institutions of excellence are used in the most effective and rational way.

The different centers of SEAMEO such as SEARCA are the answers to the basic problems that have plagued the region for ages. The various academic and research centers will be remiss in their duties if they exist in isolation serving only small pockets of Asian society. We should be glad that we have at last entered a new age of mutual cooperation in sharing facilities and expertise in building up the human resources of the region. The day should not be too far off when the people of Southeast Asia will be better fed, well clothed, adequately housed and the quality of their living conditions will have risen above subsistence level.

We are glad that you have come at a time when the SEARCA programs are in full swing and some tangible results have already been accomplished. Thus far the University has granted a Ph.D. and four M.S. degrees. At present sixty five SEARCA scholars from five member countries are undertaking graduate work in the various fields of agriculture and forestry. Other projects involving strong participation of the staff of the College of Agriculture are the Social Laboratory at Pila, Laguna which is an experiment on rural development in action and the Study on the Protein Gap which is aimed at solving the problems of malnutrition in Asia.

We hope that from these modest beginnings our contribution to the region will grow and meet the aspirations of the Center. We ask all the member countries and observers to have more faith in the project and take advantage of the opportunities open to them.

We assure all those present today that we at the University of the Philippines at Los Baños will continue to serve SEARCA to the limit of our resources.

It is my hope that with this seminar we would have made another step forward. I am confident that after the discussion of the Country Statements and the various papers and the visit to the different institutions on the Los Baños Campus, the Governing Board will be able to formulate guideposts that will make SEARCA a more effective instrument for regional development and progress.

# # #

GUIDELINES FOR SELF-EVALUATION

Prepared for the use of the SEAMEO
Regional Project Centers

SEAMES

Bangkok, Thailand

October, 1971

FOREWORD

This set of Guidelines is designed to assist the Governing Board, the Director, and the staff of each Project Center to make a thorough review of every aspect of the Center's operation since its founding. This review, or self-evaluation, was recommended by the Seminar on Educational Planning held in Bangkok in April, 1971. The eighth recommendation is as follows:

"Evaluation of Existing SEAMEO Projects.

The evaluation would begin as a form of self-evaluation by the Center themselves, according to criteria to be established by SEAMEO. The second stage would be carried out by experts."

In accordance with that recommendation, I have assigned that responsibility to Mr. Khoo Eng Choon, Assistant Director for Program. I also requested a consultant from the Ford Foundation, which has made the service of Dr. Philip Davidson, Program Advisor in Higher Education in the Office for Southeast Asia, available to work with Mr. Khoo during the initial phase of the project.

These guidelines are intended to cover every aspect of the Center's operation, no matter how extensive. They are guidelines, however, not directives, and should be modified where necessary. We hope they prove useful, and that each Center will feel that the undertaking has been worthwhile.

General Netr Khemayodhin
Director

PREFACE

This set of guidelines has been developed to assist the six SEAMEO Project Centers in carrying out a program of self-evaluation. This has not been an easy task, because the Centers vary greatly in purpose, size, complexity, and method of operation. Some elements in the guidelines may not be applicable to one center or another, others may not be adequately developed and need to be filled out by the Center itself. In some instances, a Center may find it necessary to add material in order to give complete coverage of its program.

This is an experimental exercise in many ways. Evaluation as it is known today is customarily conducted by an outside professional evaluator. Self-evaluation has some distinct advantages, even for Centers with only a small staff. The report that results from this undertaking will be a very substantial document and will be a landmark in the history of the Center.

In carrying out the study, the greatest benefit will be obtained if those engaged are as objective as possible and view the Center as an outside evaluator would. It is also desirable to avoid yes and no answers except where clearly called for and to give full answers based on broad discussion.

We believe that the Centers will find this self-evaluation exercise and the resulting report helpful in the operation and development of the Center's program, and we are ready to assist in every possible way.

Khoo Eng Choon
Assistant Director, Program

THE NATURE AND PURPOSES OF SELF-EVALUATION

The basic purpose of self-evaluation is the improvement of the organization and its programs and operations. It is an opportunity for all those connected with the organization to take a hard look at every phase of the operation to determine whether changes should be made and new directions be taken. Ideally, the evaluative process is a continuous one and should be built into the ongoing program of the Center.

Evaluation, whether conducted internally by the organization itself or externally by an objective professional evaluator, seeks to answer three basic questions, which can be asked of any kind of project:

1. Effectiveness of the operation -- Are goals and purposes being achieved? What are the factual or other evidences of that achievement? What are the reasons for the success or shortcomings of the operation?
2. Significance --Are the immediate purposes and long-range goals worthy ones? If achieved, will they make a significant contribution to the region?
3. Efficiency --Is the cost reasonable? Do the benefits justify the cost? Are there alternative methods of achieving the same objectives more efficiently or at less cost?

work. Is the cost of each course or training program reasonable and justifiable? Do administrative and overhead costs bear an appropriate relation to instructional costs? What is appropriate will vary from Center to Center depending on size and complexity, but in general administrative costs tend to get higher and higher and to become a disproportionate share of overall costs.

4. Alternative Approaches. At every point in the self-evaluation, the question should be asked: is there a better way of doing what we are now doing, or is there a better and different method of accomplishing the same objective?

One last word about the importance of self-evaluation is an organization. If conscientiously and honestly done, as these Center programs will be, it can have lasting benefits. The by-products of an intensive study of the Center by the staff are almost as important as the result of the study itself. Experience elsewhere has shown marked improvement in at least three areas:

1. Sharper definition of goals and purposes. Frequently, the purposes of an organization are so broadly stated as to defy the measurement of progress. One major outcome of the study is to achieve better definitions of goals and targets for the various Center activities -- courses, training programs and the like. Usually the broad overall purposes are well stated, but there too sharper focus can be achieved by full staff discussion and review.

2. Improved understanding and better communication. The staff and faculty become more fully involved in educational planning and become more fully aware of their responsibilities. Better communications among the staff almost always result and likewise better communications between the Centers and its related agencies, especially where they have been involved in the self-evaluation itself.

3. Better Performance. This almost always results from better understanding and clearer definitions of goals. Morale in an organization improves when the staff feels that it has a significant role in planning and when it feels it has a part in effecting needed changes. The recommendations of self-evaluation exercise have a good chance of being carried out because they emanated from the staff itself. Even Centers with quite small staff can expect benefit from an undertaking of self-evaluation.

ORGANIZATION OF SELF-EVALUATION EXERCISE

This is initially the responsibility of the Director, but all of the staff, the Governing Board, and closely related agencies should be involved. In suggesting a plan of organization, it is recognized that no single plan would fit every Center. Each must develop its own plan of operation, but the basic elements will be much the same.

1. A single person, either the Director or someone designated by him, should be given the responsibility for directing the self-evaluation program. He should be given adequate freedom from other responsibilities and sufficient clerical and other assistance to be able to work effectively.

2. A small steering committee should be appointed to work with the study director, especially in Centers with a number of staff members. In Centers with small staff, the entire group could be used as the committee.

3. Working committees or single individuals should be assigned specific aspects of the study.

4. In the section on Leadership, the Leadership Profile should be completed by the Governing Board for the positions of Director and Deputy Director. The Director should complete the Profiles for other administrative and professional staff members.

5. The Study-Director should be responsible for writing the report, which should be approved by the Project Director (if not the same person) for presentation to the Governing Board.

6. Whatever possible in the preparation of the report representatives of closely related agencies, such as the Ministry of Education, principal donors, should be involved in working with the committees.

7. The Governing Board should consider the Report in the manner it deems most convenient. Copies of the report should be sent in advance to each member. Following its study of the documents, the Board should forward the Report to the Director of SEAMES with its recommendations and approval. It is understood that this is a confidential document and will not be distributed without the permission of the Center Director.

TIME SCHEDULE

1. Immediately following notification of approval by the Council of Ministers at the Seventh SEAMEO Conference in January 1972, the Center Director should establish procedure for carrying out the self-evaluation in his Center, designating the Study-Director of the project and appointing the appropriate committees.

2. The Director should make appropriate arrangements for the two-day visit of the consultant and Mr. Khoo. The visit should give everyone concerned the opportunity to become thoroughly familiar with what is involved in the self-evaluation process.

3. The final report, approved by the Governing Board, should be forwarded to the Director of SEAMES not later than June 30, 1972.

GUIDELINES FOR THE SELF-EVALUATION

I. GOALS AND PURPOSES OF THE CENTER

The goals and purposes of an institution are its reason for existence. They merit the most careful study by the staff and Board in this self-evaluation exercise in order that there may be clear understanding and acceptance of them. In every organization there are the stated goals, the official declaration as it were of the organization's raison d'etre. Beyond those stated goals there are alway a set of objectives understood but not officially stated, and finally there may even be what are sometimes called hidden objectives. Goals may be very broadly stated, which permits flexibility in the development of the program, or they may be more precisely stated, permitting more accurate measurement of progress towards those goals. A periodic review of the Center's goals and purposes in the light of its experience and of the needs of the region is an important and useful undertaking. The information called for in the following items will assist the staff in such a review.

1. What is the declared purpose of the Center?
2. What is the origin of this statement of purpose? Can it be changed if desired? Are there legal or charter obligations affecting the purpose?

3. Does this statement of purpose represent views of present Governing Board, Administration, and staff?

4. Is the statement sufficiently specific that progress toward it can be measured?

5. Has a critical review of the statement of purpose been made in past two years, 1969-1971, in order to:
    1) Reveal discrepancies between purpose and fulfillment?
    2) Examine adequacy of resources of all kinds to meet the stated purpose?
    3) Determine relationship between services rendered under the purpose and the needs of the region?
    4) Study the role of the Center in relation to roles of related or similar institutions from standpoint of duplication, competition, and cooperation?

6. Are there purposes or objectives other than those officially stated? If so, are these commonly understood and what are they?

7. Future Plans
    1) What changes in the statement of purposes, if any, are contemplated for the future?
    2) Will any proposed changes necessitate a change in the statement of purpose?
    3) By what process will the Center re-evaluate periodically its programs and effectiveness in relation to purpose?

II. LEADERSHIP OF THE CENTER

(Profiles to be completed by the Governing Board for the positions of Director and Deputy Director, and by the Director for all other staff members.)

Leadership is the single most critical element in the success or failure of an institution. As defined here, it includes not only the Director of the Center but all who serve in a professional capacity Key elements are professional and technical competence, administrat ability, commitment to the institution and its purposes, personal qualities, and continuity. Of great importance in regional programs is the regional recruitment of staff. The balance of regional and national staff is a critical element in gaining regional acceptance.

The factual data called for and the questions asked in the following items are intended to assist the Board in its assessment. The Board may wish to add other items or questions which it deems of particular importance to the Center concerned.

1. For each member of the administrative and professional staff submit the attached Personal Data Sheet, or send copies of your own form if it covers essentially the same information.
2. Rate each of the members of the administrative and professional staff on the attached Profile, using separate sheets for each.

PERSONAL DATA

1. **Personal**

Name

Present Address and Telephone

Permanent Address

Date and Place of Birth Citizenship

2. **Family Status**

Marital Status Single/Married/Divorced/Separated/Widowed

Name of Dependents Relationship Date of Birth

3. **Education**

Schools attended	Number of Years	Field of Study	Degree
Elementary School			
Secondary School			
Advanced Education			

4. **Areas of Professional Competence**

5. **Date, Place and Title of Publications by you**

6. **Languages**

List all languages in which you have any facility, indicating the degree of facility by good, fair, or slight.

Language	Conversation	Reading	Writing

7. **List Overseas Training and Work Experiences**

8. **Work Experience (last ten years)**

Employer	Date of Service	Title & Brief Description of Duties

LEADERSHIP PROFILE

Excellent, Good, Satisfactory
Fair, Poor)

Name and Title

	E	G	S	F	P
1. Professional Competence					
a. Professional qualifications					
b. Knowledge and understanding of present assignment					
c. Ability to perform in his professional field					
d. Extent of innovative ability within his field					
2. Technical Competence					
a. Ability to analyse and solve problems					
b. Ability to plan his work, is systematic					
c. Extent of initiative					
d. Ability to write and speak clearly, precisely					
3. Administrative Ability					
a. Supervisory ability					
b. Ability to delegate					
c. Ability to work with those for whom he is responsible					

	E	G	S	F	P
d. Ability to work with those on his level as colleagues					
e. Ability to work with those to whom he is responsible					
4. Commitment to Center and its Purposes					
a. Extent to which he understands and supports purposes of Center					
b. Extent to which he instills confidence in his staff					
c. Concern for improving Center program					
d. Ability to make constructive criticism					
5. Personal Qualities					
a. Mental attitude toward work					
b. Ability to adjust to new environments					
c. Energy and drive					
d. Character and integrity					

III. ORGANIZATION AND ADMINISTRATION

This section is concerned with the internal structure and process established for the operation of the Center and its maintenance. The distribution of function or roles within the Center, the patterns of authority, the system of internal communications, the commitment to the purposes of the Center and the relation of structure to purpose all affect vitally the Center's capacity to carry out its objectives. Even the most capable staff can be rendered ineffective by the organization within which it must work.

1. The Legal Authorities of the Center
   - a. List the clearly defined legal authorities of the Center as stated in the Enabling Instrument and any other SEAMEO decisions.
   - b. Have there been any occasions in which these authorities have been questioned or about which there has been a conflict? What are those occasions and how have they been identified?
2. Governing Board
   - a. Delineate the structure of the Board and its duties.
   - b. Has the Board recently examined its responsibilities and evaluated its contribution to the Center? Are there plans for enhancing the effectiveness of the Board?

c. What have been the relations of the Board and the Director of the Center? How are Board members kept informed about the Center and its problems?

d. From an overall point of view, has the Board been affective in promoting the regional aspects of the Center's work?

3. Administrative Organization

a. With the aid of charts, stated administrative policies, and definitions of function, describe the administrative organization of the Center.

b. Is the present organization and staffing adequate to carry out the purposes of the Center? If not, what deficiencies are there and what changes are contemplated to enhance the effectiveness of the internal structure and staffing pattern?

c. Describe the duties and responsibilities of each administrative and professional officer. Are those duties clearly defined and accepted by the officer and are they generally understood by all those concerned? For each staff member, describe any discrepancies or differences between the function of the position he holds as stated in the organizational chart, the job description for that position, and the actual duties performed by the officer or staff member.

Prepare a list showing the country from which each administrative and professional staff member comes.

e. What efforts are made to recruit staff regionally and what difficulties have been encountered? Have particular difficulties been met with regard to the terms of secondment? What changes are contemplated, if any are needed, to improve recruitment policies and procedures?

f. What long-range projections are there in administrative organization, policies, and procedures that will improve the present program or permit planned expansion of the Center's activities?

g. What is the frequency of turn-over of the administrative and professional staff?

4. Non-Professional Staff

a. Describe the number and duties of the clerical, technical, custodial staff.

b. Is the number in each of the above categories adequate or excessive?

c. Are the services in support of the Center's operations adequately financed and effectively operated? If not, what are the deficiences and what remedies are proposed?

5. Salary Scales

   a. State the present salary and wage policies, scales, and actual salaries and wages paid each employee.

   b. Are these provisions adequate to insure recruitment and retention of highly qualified staff at all levels?

   c. Are salaries paid professional staff comparable with those paid by host country or institution for similar positions? Higher, lower, about the same? If different, has this difference created any problems, and if so, what remedies are being considered, if it is felt they are needed?

6. Fringe Benefits

   a. What fringe benefits are available to both professional and non-professional staff.

   b. Are these benefits considered adequate by both groups? In what respect are they considered deficient?

   c. With respect to regionally recruited staff, are these benefits adequate to secure staff members of high qualifications?

   d. Further, with respect to regionally recruited staff, are adequate provisions made for the individual's annual, home, and vacation leave? What difficulties have arisen in these matters and what steps have been taken to remedy them?

e. What opportunities are provided for professional growth of staff members? Research opportunities, attendance at professional meetings, visits to similar programs in the region and elsewhere, in-service training and the like? To what extent does the staff avail itself of such opportunities?

IV. INSTRUCTIONAL PROGRAMS

The instructional or training program is one of the most important and commonly used methods the six Project Centers use to achieve their goals and objectives. It is the translation of the goals of the Center into more concrete pattern of action and the allocation of resources to those activities.

These Guidelines identify three major methods by which Centers expect to achieve their goals: the instructional programs, the service activities, and research. Instructional programs as dealt with in this section refer to formally organized courses of study or training programs offered at the Center itself in a recurring pattern. Service activities and research are dealt with in separate sections which follow this one.

1. Course Offerings

   a. List all courses planned or listed in the publications of the Center, giving the following information about each:

      1) Brief and precise statement of purpose or objectives
      2) Brief outline or statement of course content
      3) Admissions requirements
      4) Length of course

5) Maximum intake permitted, and quota from each member country

b. On the accompanying chart, list courses actually taught and number of students who enrolled and who completed each.

2. Correlation of Program and Objectives of the Center

a. Are there any discrepancies between the stated Center objectives and the instructional program? If so, what are the plans to reconcile the two?

b. To what extent are the instructional programs considered adequate to meet the needs of the region in the Center's area of responsibility? How are those needs determined and by whom?

c. What evidence is there that the training courses being offered do in fact meet regional needs?

d. What part does the Governing Board play in determining the educational programs?

3. Admissions

a. Who determines the admissions policy for each course or program and how was it done?

b. To what extent has the policy been effective in admitting students who can benefit from the training?

c. Describe the actual procedures for recruiting, screening and accepting trainees or other participants in instructional programs.

d. To what extent has lack of proficiency in English been a problem in recruiting or admitting otherwise qualified trainees? What measures have been taken or are being contemplated to remedy any difficulties in this area?

e. What difficulties have instructors experienced with classes containing trainees of widely varying proficiency in English or with greatly different academic backgrounds?

f. What changes if any are being contemplated in the admissions policies of the Center? Are these changes being considered on the basis of experience to date? In response to requests from the participating countries or agencies? If for other reasons, state them.

4. Trainee Achievement

a. Describe the methods used to measure trainee progress in his learning situation.

b. State the number of drop-outs to date, giving reasons for each case and the country of the student and name of course.

c. How many trainees to date have been considered to have "failed" in the final assessment? How many have been so notified?

d. On completion of training what recognition does the trainee received? Attach copies of any certificates, diplomas or other types of academic recognition.

Instruction

a. What efforts are made to measure or evaluate the effectiveness of instruction in the several training courses being offered?

b. Are instructional methods appropriate to course content and objective?

c. Have any studies been made to determine the relationship of class size to effectiveness of instruction in each course? How are class sizes determined?

d. Describe any experimental measures attempted for the improvement of teaching and/or for more effective learning on the part of the trainees.

e. Are new methods of instruction being sought? Describe any changes in instructional methods being used in any of the courses.

6. Future Plans

a. During the next few years, say five, what changes are contemplated with respect to course offerings, training programs, certificates or degrees to be awarded, experimental ventures, and instructional techniques.

b. What changes will be needed in admissions policies and practices in the light of the above plans?

c. What changes in instructional staff and organization will be needed?

d. What long-range projections of capital development, expansion of physical facilities, and administrative leadership would be involved in effecting the planned educational developments?

e. On what basis are changes in the instructional programs projected and by whom? Are changes being considered as a result of requests from the participating countries; studies made by professional staff and others; or by *ad hoc* planning groups? If by the last, what is the composition of such groups?

Enrollment

Name of Course	Duration	1969		1970		1971		1972	
		Entered	Completed	Entered	Completed	Entered	Completed	Entered	Completed

V. SERVICE ACTIVITIES

The service aspect of the Center's functions and operations may include a great variety of activities intended to further its objectives. Examples are workshops, conferences, seminars held on an ad hoc, non-recurring basis, consultant and technical services, in-service training programs offered at the site of the requesting agency, bibliographical or statistical services, and the use of specialized equipment or laboratories not available elsewhere.

1. Describe the service activities that are being or have been carried out by the Center.
2. To what extent are the Center's available services requested for or made use of by other agencies?
3. To what extent are Center's services unique, in that they are not available elsewhere to the requesting agency?
4. What additional service activities are being considered and for what purpose? Are these in response to requests from member countries or other agencies?
5. What budget, staff, or facilities deficiencies inhibit providing what are considered desirable services? What problems do you foresee in expanding the service activities of the Center?
6. What is the role of the service function of the Center in relation to its instructional and research programs?

VI. RESEARCH

Research carried on in the Center is a third method of achieving Center objectives and can have long lasting and continuing effects beyond even the life of the Center itself. As in the case of the service functions, there are many types of research, such as the personal researches carried on by staff members, research on its own operation conducted by the Center, research on new methods of teaching, the learning process, the in-depth research study in areas of Center concern either by individuals or by a team, cooperative research carried on with other agencies, and so on. Key elements in the evaluation of research as a tool or method, are the importance the Center attaches to it, the proportion of time and resources devoted to it, the conditions under which the research is conducted, and the extent to which the findings and results of research influence Center operations.

1. List all research projects which have been or are being conducted by staff members. For each give author, title, abstract of contents, and publication data if published.
2. Does the Center accept contract research or does it entertain requests for research from agencies within the region? Outside the region?

3. To what extent is research considered to be an integral and important function of the Center as compared to instruction and service?

4. If research is considered a desirable and important staff activity, what difficulties have been experienced by the staff in carrying out research projects?

5. What plans are there to expand the research activities of the staff or Center?

VII. PHYSICAL FACILITIES AND THEIR UTILIZATION

1. Prepare an analysis of each existing facility, showing age, general condition, lighting, ventilation, and adaptability to present and future use. Describe in more detail libraries and laboratories pointing out special features of library holdings and list specialized scientific equipment.
2. For each existing facility, state the nature and extent of utilization of each room or space, e.g., Building A, Room 1, Biology Laboratory, Number of hours per day and number of days per week being used.
3. Describe any highly specialized or very expensive equipment and the extent of its utilization, also in terms of the number of people who use it and the amount of time per week in use.
4. Describe the extent to which space is borrowed from other agencies or shared with other agencies.
5. Are present instructional needs adequately met by present space and equipment? If not, what deficiencies are there?
6. Are laboratories and libraries considered adequate? If not, what action is planned?
7. Is there an inventory of equipment and how and by whom is it maintained?

8. Are there adequate fire and safety regulations and equipment?
9. Are the plants and contents sufficiently covered by insurance?
10. Is there liability and workmen's compensation?
11. What plans are there for plant development and expansion? Upon what studies were these plans made? Were staff members involved?

VIII. FINANCIAL RESOURCES AND UNIT COSTS

The material in this Section is almost self-explanatory. Quite obviously the problems and effort involved in mobilizing and ensuring the steady and reliable availability of the financial resources of an institution affect every aspect of the Center's activities and represent an important preoccupation of all the Center's leadership. On the one hand, new sources of funds must constantly be sought and on the other, continuous review of the Center's program to increase efficiency is a prime responsibility of the staff.

1. Organization of Administration

   a. Describe the financial operations of the Center, submitting accounting, purchasing, budgetary, and other forms used.

   b. What controls have been established to insure proper use of funds? Are these controls considered adequate?

   c. Are accounts audited regularly by qualified accountants? Submit copies of any such audits.

2. Budgets

   a. Describe the budgetting process, indicating who is involved in the process at each stage. Delineate clearly the role of the staff, the Director, the Governing Board, SEAMES, and SEAMEC, the Host Country, and Donors or other relevant agencies.

b. Who is responsible for budget control? Do controls adequately insure that the objectives of the budget and the program are being carried out without undue restrictions on the Director and staff?

c. In what ways are budgetting and planning of programs related?

3. Operational Expenditures

a. Show the amount and percentage of operational experditures annually, since the beginning of operations by budget categories. Also show the total expenditures, for staff salaries by the following: general administration, instructional, and non-professional.

b. List ranges of salaries for administrative and professional personnel over the life of the Center.

4. Receipts and Income

a. Describe the organization for the receipt, disbursement, and custody of funds. Are these considered adequate? Are all persons handling Center funds bonded?

b. List the amount and percentage of the various items of income since the beginning of operations.

c. Give current funds surpluses or deficits over the entire period. What are the policies for dealing with surpluses or deficits?

5. Capital Development Income and Expenditures

   a. Show sources of capital development funds since the beginning and show application of those funds.

6. Auxiliary Enterprises - If none, state NONE

   a. List those operations identified by the Center as auxiliary enterprises, such as bookstores, food services, dormitories, rental property. Who has responsibility for their management?

   b. Show the income and expenditures in respect to each enterprise over life of the Center.

7. Purchasing, Storerooms, Inventory Control

   a. Who has responsibility for the above items? Evaluate the procedures for all purchases.

   b. Describe the frequency and procedures for checking and updating inventories.

8. Future Projections of Financial Needs

   a. Describe the plans which have been made for the guided development of financial resources. Such plans should include the following:

      1) Projections of expenditures in major categories.

      2) Needs for additional physical facilities.

      3) Possible trends in distribution of expenditures.

4) Possible sources of new income.

b. On the basis of the above projections, develop annual budgets of income and expenditure for the next five years.

9. Future Financial Viability of the Center

a. What is the anticipated financial capability of the Host Country to support the project following termination of support from the USG?

b. What is the Host Country's attitude toward full and expanding support for the Center? What evidence is there of support from key governmental and political figures?

c. What other sources of income are being considered?

d. What fund raising programs are being mounted or considered?

e. Are increased fees or payments from students expected to provide an important source of new income?

EXPENDITURE

	1968		1969		1970		1971		1972	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Salaries										
Travel										
Operating Supplies										
Communications										
Utilities										
Maintenance & Rep.										
Seminars & Conf.										
Fund Raising & PR.										
Miscellaneous										
Total										

INCOME

	1968		1969		1970		1971		1972	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Host Country										
U.S.G.										
Others, list										
Total										

UNIT COSTS

The determination of unit costs may be difficult since to do it precisely calls for sophisticated a system of cost accounting which is normally not justified in terms of its expense. However, a reasonably good approximation may be obtained in the following manner, especially in those Centers in which a substantial part of the operations is in formal instructional courses.

1. From 3 above obtain the amount of salaries for professionals.
2. Add to this figure the amount of any other known expenditures incurred for the instructional courses.
3. Determine the percentage of the total expenditures represented by the sum of 1 and 2 above.
4. Subtract the sum of 1 and 2 from total expenditures.
5. Subtract from the remaining figure in 4 the sum of any known expenditures devoted to research and service programs.
6. Multiply figure in 5 above by the percentage figure in 3 above.
7. Add the resulting figure to the sum of 1 and 2.
8. Multiply the number of students in all programs by the number of hours in which each student is enrolled, thus obtaining the total number of student hours taught.

9. Divide the amount in item 7 by the total numbers of hours taught in item 8. This is the cost of teaching one student one hour. When multiplied by the number of hours in a course, the result is the per student cost of that course.
10. Chart this unit cost over the period of the Center's operation.
11. In the case of Centers which obtain instruction from affiliated institutions as in the case of SEARCA and The College of Agriculture, the cost of instruction for SEAMES trainees is the cost charged by the affiliating institution. It may be the tuition covered by the fellowship grant, or it may be a charge rendered the Center by the affiliating institution.

In case where consultants whose services are contributed are used in instructional programs, and their salaries are not charged to the Center budget, include their salaries in estimating total cost of instruction. If their salaries are not known, use the best estimate obtainable.

The method of estimating the unit cost of instruction that is proposed here may not fit every case. In such instances, the Center should develop its own method of estimating unit costs and explain it in detail in submitting the figures.

Name of Course	Enrollment	Total hours instruction (No. of weeks x hrs per wk)	Total Student hours	Unit Cost	Total Cost of course

IX. THE INSTRUCTIONAL STAFF

The instructional staff is the key to the success of any institution involved in an educational or training program. Their individual qualifications and experience, and their commitment to the program, as well as the conditions under which the teaching staff functions are all important elements in the quality of the instructional program. In most educational institutions, a full-time resident staff with substantial length of service is considered of real importance, with part-time or visiting staff being used under the most carefully controlled conditions. Overriding considerations, however, are always the professional qualifications of the staff and their individual performance.

1. Recruitment and Selection

   a. Describe the procedure for the recruitment of the teaching staff. How and by whom are candidates selected and appointed?

   b. List again the number of professional staff from countries other than the Host Country, giving citizenship of each, and answer the following questions about the recruitment process:

      a) What difficulties have arisen with recruitment within the region?

b) What difficulties have arisen with recruitment outside the region?

c) What difficulties have arisen with recruitment through technical assistance?

c. To what extent are present procedures deemed adequate?

d. Are any changes in procedure being considered, and if so, what?

2. Status and Qualifications of each Staff Member

a. Academic preparation, earned degrees, specialized training professional experience relevant to present assignment

b. Length of service at the Center

c. Number full-time

d. Number part-time

e. Types and duration of appointments

3. Professional Duties of each Staff Member

a. Teaching loads, number of hours taught, number of students taught during the year or period of employment

b. Committee assignments or other administrative duties

c. In the case of full-time staff, what policies govern outside employment, both in professional and non-professional activities?

4. Professional Freedom

   a. Provide any statements that have been adopted by the Governing Board, or other Center officer or agencies with respect to the freedom of members of the instructional and research staff to write and speak as they wish and to engage in community activities of their choice.

   b. If no formal statements have been adopted what is the administrative policy with respect to such elements of professional security?

   c. Are such policies as have been formally stated or informally expressed clearly understood by all concerned?

   d. Have any restrictions in the above matters been placed by the Center on staff members? If so, by whom and by what authority? Give all instances of such restrictions.

   e. What restrictions have been placed on staff members by any other agency and by what authority? Describe any such instances.

   f. Under what circumstances may a professional staff member be dismissed?

5. The Evaluation and Improvement of Instruction

   a. By what means and by whom are members of the instructional staff evaluated?

   b. What criteria are used and by whom were they developed?

   c. Are evaluations of instructional staff by trainees encouraged?

   d. What follow-up is there of evaluations of staff members? Are they discussed with the individuals concerned?

   e. What efforts are made to improve the performance of individual staff members?

6. Projections

   a. Project in detail the number of staff by subject area that will be needed to carry out planned developments in the next five years.

   b. Project for the same period the salaries and benefits required to enable the Center to attract and hold instructional staff of high calibre.

X. TRAINEES AND ALUMNI

TRAINEES

One of the easiest and most frequently used measurements of quality and success of an educational institution is the calibre of the students and their achievements in later life. It is quite likely in fact that the six SEAMEO Centers are best known and judged in the region through the trainees that return to the member countries.

This Section is concerned with the present group of trainees, personnel policies, trends, and follow-up on trainees as alumni. Admissions policies and trainee achievement have already been dealt with in Section IV.

1. Present Trainees

    a. Describe the trainees enrolled in courses during current year in terms of country of origin, sex, age, academic preparation, length of service and position held in home country.

    b. Do the same for research fellows or associates.

    c. Describe any changes in characteristics of enrollment over the past years.

2. Academic and Personal Records

    a. What types of information does the Center have on each trainee at the time of entrance? (Secondary school or college and university records, test scores, medical records, recommendations) What use is made of this information?

b. What records are maintained on trainees? Who is responsible for trainees' records?

c. Is there a test evaluation program at the Center in respect to trainees performance?

3. Orientation and Guidance

a. Describe any orientation programs used by the Center.

b. Are guidance and counselling services available to trainees and of what sort -- educational, vocational, personal?

c. Are there plans for modification and expansion of such services? What is considered to be the need for such services now and in the future?

4. Housing, Boarding, and Health Services

a. Housing

1) List and evaluate housing accommodations for single and married (if accompanied by wives) provided by the Center. Indicate whether this housing is on or off the campus, and whether it is owned by the Center or leased by it.

2) Describe and evaluate housing available in other than Center facilities.

3) What plans are there for changes in housing facilities and policies?

b. Food Services

1) Describe and evaluate food services offered by the Center or available at the Center.

2) If none, describe and evaluate services available elsewhere.

3) What changes are being planned in food services?

c. Health Services

1) What facilities, procedures, and personnel are available for health service and medical care?

2) What new facilities and services are considered to be needed?

3) Is health insurance available for trainees? Who pays the premium?

4) Have adequate provisions been made to care for cases of extreme urgency -- serious accident or death, for example?

d. Extramural Activities

1) Describe extramural activities available to trainees.

2) To what extent are trainees encouraged to participate in such activities and to what extent do they?

3) Are there planned activities for families of married trainees, if any?

e. Trainee Participation in Center Affairs

1) Are trainees involved in the Center's planning of programmes and activities?

2) Are trainee evaluation of instructional programs sought?

3) Are there other ways in which trainees are involved in Center activities?

f. Discipline and Withdrawal

1) Has the Center encountered any disciplinary problems?

2) Have any trainees been requested to quit a course? Describe any such incidents.

3) Who is responsible for trainee discipline?

4) Have trainees left the program for reasons other than academic or disciplinary? List all such incidents with explanatory comment where reason is known. What efforts are made to deal with such cases, and to correct problems which may have led to the withdrawal?

ALUMNI

1. Describe efforts to keep in touch with former trainees.
2. Are the opinions and suggestions of alumni sought on such matters as the quality of instruction received, new programs which might be offered, modification of existing ones, additional services to be provided, and so on.
3. Are alumni used to any extent in recruiting either trainees or staff?
4. Are records of alumni kept up to date and by whom?
5. Do those records show the progress the alumni is making in his career in his home country? Is there evidence that the work he did at the Center influenced his career and that he uses it in his work? What recognization did he receive either by the Civil Service of his home government or the agency by which he is employed?

XI. PUBLIC RELATIONS

The image of an institution is one of its most cherished and important features. It is important in attracting the type of trainees and staff an institution desires, in obtaining support, and in a very real way, therefore, of achieving its objectives. It is thus a matter of concern to each Center that its image be properly projected throughout the region and to those to whom it may legitimately look for support.

1. Does the Center have a formally organized public relations program? Describe it. Who is responsible for it?
2. Describe the efforts made to present the Center's program and achievements to the public. What, in fact, does the Center conceive its public to be ?
3. Submit copies of bulletins, brochures and publications and other similar materials and describe its circulation or distribution.
4. What evidence do you have that these efforts have been effective?

XII. INSTITUTIONAL RELATIONSHIPS AND LINKAGES

This Section is of major importance in evaluating the present success and future potential of the Center. It concerns the relationships or linkages of the Center with those institutions with which it must deal and which affect its performance and viability. The Center must maintain a network of relationships for purposes of gaining support, overcoming resistance, exchanging resources, and spreading its influence. These relationships can be identified in four widening circles:

1. A group which has some measure of authority over the Center, (sometimes conflicting with each other over Center affairs), and which control its resources. The principal ones are SEAMEC, SEAMES, agencies of the host country -- Ministries of Education, of Finance, -- affiliated institutions like the College of Agriculture and the National Biological Institute in the case of SEARCA and BIOTROP respectively, and major donors, like the United States Government.

2. A group of less closely related but still important institutions which provide the Center with its trainees and fellows, and to some extent its staff, and which use the products of the Center.

Such institutions would include agencies of SEAMEO country governments, colleges, universities, teacher training institutions, research agencies, and the like.

3. A third group comprises those institutions which have similar programs or which have similar objectives. Examples would be the national language centers as they relate to RELC and national science centers as they relate to RECSAM.

4. Finally, the remote and less readily identifiable group of people and organizations which have an interest in the Center but which have no immediate relationship to it.

The relationships of the Center with all four of these groups need to be explored to determine the extent to which these linkages are favorable and effective.

1. Identify the first group of institutions, listing each and describing the relations with it in the following terms:
    a. Nature of the relationship. Is it clearly understood by all concerned?
    b. Extent of authority exercised by each on the Center
    c. Favorable aspects of the relationship
    d. Unfavorable aspects of the relationship
    e. To what extent have conflicts of authority developed between these institutions?

f. To the extent that there have been problems, what efforts have been made to solve them?

g. What changes are being considered in the Center's relationships, formal or otherwise, with the institutions in Group 1 ?

h. Specifically with respect to SEAMES, cover the following points:

    1) List the responsibilities the Center has to SEAMES.

    2) List the services or contributions expected by the Center from SEAMES.

    3) List any continuing problems that have arisen in relations with SEAMES and describe efforts made to deal with them.

    4) With regard to the fund raising responsibilities of SEAMES, have these been discharged to the satisfaction of the Center? To what extent has Center staff been involved in the fund-raising program, or to what extent should it have been involved?

5) In case SEAMES is not able to provide its share of special funds, can it be anticipated that the Host Country will assume the entire cost?

2. List the institutions in Group 2 throughout the region that are of particular importance to the Center, and describe the relations with each.

   a. To what extent are these relationships favorable? Unfavorable?

   b. What efforts have and are being made or are under consideration to deal with any unfavorable relationships that may have arisen? As an example, accreditation or certification problems.

   c. Are relationships being sought with institutions other than those now currently linked to the Center. What actions or plans are contemplated to establish relations with other institutions.

3. List the institutions in Group 3 which are most closely linked to the Center and describe relations with each. Are these relationships considered important to the Center? If so, what efforts are being made to consolidate and strengthen them?

4. Describe as best you can the diffused relationships or linkages with Group 4 institutions or individuals.

a. To what extent are these favorable? Unfavorable?

b. What efforts are made to identify such institutions and determine the quality of the relationships?

c. What evidence do you have of the existence of these relationships?

SUMMARY OF EVALUATION

1. What is the Center's overall judgment of the effectiveness of its programs in achieving its goals?
2. What is the Center's judgment of the significance of its programs?
3. What is its judgment of the efficiency of the project Center in terms of overall cost?

SUMMARY OF PROBLEMS AND RECOMMENDATIONS

On the basis of the material in this report, summarize here in order of importance, what the Center considers its five most serious problems to be, and state what action is being taken with respect to each and what recommendations are being made regarding them.

(Supplementary)

Guidelines for Self-Evaluation

Special Funds Requirements*

Introduction

As approved by the Council at its Extraordinary Conference held in Bangkok in May, 1970, the components of Special Funds are are follows:

1. Training and Research Scholarships
2. Research Fellowships and Grants
3. Governing Board Meetings
4. Seminars and Conferences
5. Personnel Exchanges
6. Project Feasibility Studies (SEAMES has the responsibility of preparing the annual estimated requirements for this component.)

The Council further defined each of the above components of Special Funds with the view to clarifying them and avoiding any possible misinterpretation. (Please refer to page 65 of the Final Report of the Extraordinary Session of SEAMEC, Document SEAMES/MC5 Ex/7, for details of the definitions).

It can thus be seen that, except for the component "Project Feasibility Studies", the Centre Directors will have to prepare and submit to SEAMES their respective Special Funds requirements for each year.

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*The Secretariat is responsible for raising the money for Special Funds requirements of Regional Project Centres in their permanent stage. The United States Government will support this effort in the form of matching the funds raised from non-USG sources for this purpose up to the maximum of 50% of the actual Special Funds requirements of the Regional Project Centres during the first five years of

The information asked for in this section of the self-evaluation exercise is intended to provide ready information for review of the Special Funds requirements of the Centres, particularly in regard to the extent to which each Centre has been capable of implementing its planned programmes and activities relating to Special Funds.

1. Projected 5-Year Special Funds Requirements of Centre

Year of Permanent Operation / Components	1st Year (197)	2nd Year (197)	3rd Year (197)	4th Year (197)	5th Year (197)	Total
Training and Research Scholarships	--	--	--	--	--	--
Research Fellowships and Grants	--	--	--	--	--	--
Governing Board Meetings	--	--	--	--	--	--
Seminars and Conferences	--	--	--	--	--	--
Personnel Exchanges	--	--	--	--	--	--
Total	--	--	--	--	--	--

Note: In preparing the above table, please give only your latest or most up-to-date figures as have been furnished to SEAMES.

2. Details of Special Funds Requirements

For each year of permanent operation, please supply detailed breakdown of your Special Funds requirements for each of the components.

E.g. Training and Research Scholarships

Number of scholarships and value of each type of scholarship.

Research Fellowships and Grants

Number of fellowships and value of each type.

Governing Board Meetings

Number of meetings and estimated cost of each meeting.

Seminars and Conferences

Number of seminars/conferences and estimated cost of each.

Personnel Exchanges

Number of personnel exchanged and estimated cost of each personnel.

3. Annual Budget and Expenditures of Special Funds (for 197)

Special Funds Component	Budget	Expenditures	Difference	Remarks
Training and Research Scholarships				Account for the "Difference" in each item
Research Fellowships and Grants				
Governing Board Meetings				
Seminars and Conferences				
Personnel Exchanges				

4. Breakdown of Value of Scholarships for Each Course

E.g. Tuition
Subsistence

Books and supplies
Research and thesis support
Local transport
Insurance
Miscellaneous supplies (for lab. and field work)
International air travel (round trip, economy class)
Other relevant items

(Please quote the most up-to-date figures).

5. Breakdown of Value of Fellowships/Grants

Along the same lines as No. 4 above.

6. Breakdown of Cost of Each Governing Board Meeting
(Title; Venue; No. of days)

E.g. Air fare for Board Members
Air fare for Centre staff members
Per diem for Board Members
Per diem for Centre staff members
Representation
Secretariat supplies and printing
Secretarial help
Other relevant items.

7. Breakdown of Cost of Each Seminar/Conference
(Title; Venue; No. of days)

E.g. Air fare for participants from member countries
Air fare for Centre staff members
Per diem for participants from member countries
Per diem for Centre staff members
Representation
Secretariat supplies and printing
Secretarial help
Other relevant items.

8. Breakdown of Cost of Personnel Exchanges for Each Year

E.g. Number of personnel involved
Cost of air travel
Per diem allowances
Honorarium
Books and supplies
Internal travel costs
Other relevant items.

PRESENTATION OF THE PAPER ON SELF-EVALUATION[4]

In Bangkok last April, the SEAMEO Educational Planning Seminar made 16 recommendations covering eight areas, and one of the areas was the Evaluation of Program Activities of the SEAMEO Projects. Following these recommendations, SEAMES sought the assistance of the Ford Foundation for a consultant, and we are very happy to have the services of Dr. Philip Davidson, who is here. Largely, through the efforts of Dr. Davidson, SEAMES has prepared some guidelines for the self-evaluation exercise which are not put into a document. Subsequent to the preparation of these guidelines, Centre Directors were furnished each a copy of these guidelines and were asked to comment, react and to suggest any amendments. At the Project Directors' Meeting in November, 1971, the reaction of the Centre Directors were considered, and it was agreed that, subject to certain modifications or amendments, as needed to suit the circumstances of the various Centres, these guidelines be accepted in principle. It was also suggested that a section on Special Funds be included and consequently you will see that there is in this document a supplement to these guidelines pertaining specifically to what is called Special Funds Requirements.

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[4] Delivered by Mr. Khoo Eng Choon, Assistant Director for Program of SEAMES.

Now, it is appreciated that it is not possible to draw up guidelines that will fit all the Centres, bearing in mind that the six SEAMEO Centres are of different sizes, have different purposes, are organized and funded in different ways, and are staffed and administered differently. Therefore, these guidelines which you have before you are merely guidelines — they are by no means rigid. These guidelines are flexible and it is clear to Centre Directors that in trying to carry out this self-evaluation exercise of their respective Center programs, they are at liberty to adjust and amend any of these guidelines in order to suit their particular needs. It is of interest to point out here that with regard to Chapter Two on the topic of "Leadership", some Centre Directors have indicated that in their view it would be very difficult to implement the section on the leadership as of the Centre Directors. In response to that observation, it is agreed that it be left to the Centre Director to determine how this portion pertaining to leadership of the Centre Director is to be implemented. SEAMES is of the view that we should also leave it entirely to the Governing Board to decide how this particular aspect is to be implemented. If the Governing Board feels that they do not want to evaluate the leadership provided by the Centre Director, they are of course at liberty to do so. If however, they should want to amend or adjust the guidelines so as to fit their particular purpose, we will have no objection to that.

As you can see from the content of these guidelines on self-evaluation, we have tried to cover as far as possible, every aspect of the Centre's operations. You will see that we look into the Centre's organization and administration; the instructional programs, the service activities, research, and we even call for an examination of the physical facilities and the staffing position of each Centre.

In order that the programs of a Centre could be improved so as to meet the needs of the region, it is essential that we get some sort of a feedback from the trainees and alumni. Consequently, we have included a chapter under the heading of Trainees and Alumni.

Public Relations is also looked into. This is because it is a very important aspect of a Centre's programs and activities, since the Centre has to establish rapport with the general public. We have to keep potential donors informed particularly for purposes of fund raising. It is essential that we project an image which is impressive and attractive enough for people to assist us in one way or another.

Well, I will not at this moment go through the questions in various chapters of the guidelines. But Dr. Davidson and I are here and we will be very happy to answer any question or to clarify any point which you may wish to raise.

Thank you very much.

# # #

RECORDS OF DISCUSSION ON SELF-EVALUATION

by

Mr. Khoo Eng Choon and Dr. Philip Davidson

Question -

In the evaluation plans, is there a provision wherein objectives and goals of the host educational institution are taken into consideration so that SEARCA, or any of the centers, would have a way of finding out how its own objectives and goals can dove-tail into the objectives and goals of the host educational institution?

Answer -

The section at the end of the guidelines, which concerns the relationships of SEARCA in this case with a group of institutions with which it is affiliated or with which it has even remote relations, constitutes a very significant part of these guidelines. SEARCA and all of the projects have relationships with certain institutions upon which they depend. You depend for money upon your host country, upon the US Government; they depend upon your instructional program, much of your research program, many of your professional relationships upon the College of Agriculture and the University of the Philippines. You depend, somewhat more remotely, upon other organizations. You depend immediately upon SEAMEO. The Secretariat and the Centre Director and the Boards should look with great care at those relationships. Specifically, with respect to the question about whether provision is made in this document for an explanation or description of the College of Agriculture's goals, it is only indirectly stated but is directly called for in the sense that SEARCA utilizes the instructional facilities of the UPCA. SEARCA needs to ask itself very clearly and very specifically: are the students from Malaysia and Vietnam, for example, taking those courses getting materials that are of importance to them, relevant to what they need to do in Malaysia or in Vietnam, or in developing and professional competence? You have research relationship with the International Rice Research Institute, or any of the others and this should be examined with considerable care because this is SEARCA's real business. We have not suggested that the Governing Board or the Director attempt to make a thorough evaluation of the College of Agriculture, but we do say that you should examine in great detail the specific relationships you have.

Remark -

I do think too that the objectives of the Host Institution might have to change a little bit over time as it interacts with the regional organization of SEARCA.

Question -

How often would you think a self-evaluation process be made, once a year or once in how many years?

Answer -

I think this will be a matter for the Board and the staff to determine. Actually, one of the things we hope for is that each Center would build into its regular program a continuing review of its activities so that instead of having a paroxysm of evaluation every 3 or 5 years, the Center will take a look at itself, as it go along. Now the purpose of the self-evaluation exercise, the first of its kind, is in a very real sense experimental. It is intended that you look at yourself and determine to what extent you think you are clear in your purpose, and to what extent you think you are achieving that purpose, because that is essentially what evaluation is. What is your purpose? To what extent are you achieving? Could it be done? Could the purpose you have in mind be done more effectively some other way? As we were saying in another agricultural situation, instead of training a farmer to grow more rice, maybe we should train him to be an electrical technician, if your purpose is to increase his income. So what we are suggesting in a long winded kind of an answer to your question, is that we will hope on the basis of this questionnaire or something else you devise, you would build into your regular program continuing review, and then I would say that at least every three years you ought to make a pretty careful review of your entire program.

Remark -

In SEARCA, we have the Academic Consultative Committee which consists of UP Vice President and the two Deans, the SEARCA Director and the Director of Graduate Studies. I understand this committee is contemplating an establishment of sub-committees and one of the sub-committees is a sub-committee on program formulation and project evaluation. I think this sub-committee will provide for the continuing evaluation of our program.

Question -

Dr. Davidson, and Mr. Khoo Eng Choon, you know, to recall Shakespeare, if we did with self-evaluation all the time ourselves we might be seeing the project with a "jaundiced eye" and, of course, in your paper here you have pointed out that the 2nd phase of the evaluation will be done by experts. Now, have you considered a bridge between the project evaluators, self evaluators, and the experts in terms of areas which they should look at so that their viewpoints would be complementary and supplementary instead of situation wherein the experts might come in and would not be able to make a very good evaluation merely because the self evaluators have failed to look at certain areas and, therefore, the information that would be useful and meaningful to the experts is not there?

Answer -

No plans have been made for any specific program evaluation from the "outside". This will be determined by the Council on recommendation of the several Project Directors. The point here is an important one. If you can think of anything we have not covered in this document, I will be glad to try to write it in. We felt we have pretty well covered the main features for a program of this sort. What I would like to see actually as we move into the 2nd phase is that the work begins fairly soon after you have completed these guidelines. There shouldn't be a long delay. Secondly, I would like to have whoever does this work to have the benefit of all these documents, and before coming in for the actual visit to prepare whatever additional questions he may want to ask so that you will have plenty of time to work on them. There must be a clear, continuing relationship between what you study of yourself and what some other looks at. You spoke of looking at yourself with jaundiced eye. That might be better than looking at yourself through "rose-tinted glass".

Question -

Will unit cost and facilities be confined in the participants of the different countries in SEARCA and solely for SEARCA facilities? Because it is quite possible that the agency may be in a capacity to absorb more but should we base current cost, let us say to only those studying at SEARCA, it may not take the true picture?

Answer -

That is an important question but it is not one that we felt was the responsibility of the SEARCA. The cost that SEARCA is concerned with is what is its cost to train a single student in the programs that we have here. Is that cost a reasonable cost in terms of what you get? If, for example, you have a seminar and you bring in 10 students and its a six week seminar and you discover when it is over that this has cost you $5,000 per student, there must be a cheaper way of doing that. Now, are these costs reasonable? From your standpoint, Sir, in the College of Agriculture, that is a very big question. I am sure in your minds the question is whether or not the SEARCA student is paying his way or are you subsidizing him? Conceivably, in the College of Agriculture, through your graduate program, you could be subsidizing the student by not charging SEARCA the educational cost. That's a matter which the College of Agriculture should determine and I would think that as a by-product of this kind of an operation a careful look by the College and its unit cost would be a timely and appropriate thing to do, but our concern was SEARCA. What are its costs?

I think an equally important question for the overall operation is: what are the other costs to the host institution and how they are related to charges they make?

Question -

As a corollary to that, Dr. Davidson, when you talk of costs, the cost don't really mean anything at all unless they are related to certain standards because when you are considering cost, one of the questions that come to mind is, well, are you paying less or enough in relation to the output or in relation to a standard? What standard do you have, if any, that you have in mind?

Answer -

They are all good questions. The $5,000 figure I gave for the 6-week seminar might be a perfectly reasonable charge for a certain type of extremely high level, expensive instruction. I think that all the way we did not attempt to build into the inventory a standard of instruction. All you can do is to say: could a program of comparable value be obtained more reasonably under other circumstances?

Question -

Another question is - Do you anticipate the standardization of reporting systems so that you would have assurance that you would have the information that would flow toward certain conclusions that an evaluator whether a self evaluator or an outside expert would need?

Answer -

Whenever we talk of standardization of information from SEARCA, from SEAMES projects, we are on a very shaky ground because they are all quite different. BIOTROP is a totally different kind of operation from the RELC, or RELC from SEARCA so that we could only hope to provide a base from which they will work and then develop their own special needs. We would hope that each project center would develop a system of reporting which it would use throughout and for subsequent evaluators. There is no thought in the minds of SEAMES officials that any effort would be made to compare projects. There is no valid way in which you could compare projects and say this is doing a better job than that. Each one must be judged in terms of its program and its own operations.

Remark -

Very good, Sir, I think that's the whole thing that make sense so we can't compare projects.

Remark and question -

Results of evaluation will be utilized by the Center doing the evaluation but I have observed in some instances that there are 2 sets of evaluation; one for the purpose of fund raising and the other one which tells the truth and I just wonder whether evaluation information be taken in this procedure be something that would be "confidential" for the use of the particular Center itself or is it something to be for public consumption, for other members of the organization outside of the center that would utilize this. Because we have had some experiences in the past where evaluation results, as we said, would give the true picture and the other one did not show true picture and so one is for public consumption and the other one is for private consumption. So what provisions do we have that evaluation would be the true story and not the hidden or the untold story of the Center?

Remark

This is most revealing in many ways.

Remark -

From the standpoint of those who work on it, it was our intention that it would be a completely confidential document. It is of no real value to you if it isn't. SEAMES does not intend to take this document and use it in any promotional way. From the standpoint of fund raising, the fact that you are reviewing yourself and are coming out with something is important information and conceivably when you get an expert evaluation that maybe useful. From the fund raising standpoint, the fact that you are reviewing yourself conscientiously and seriously is important. But, I think it would be a serious mistake if SEAMES should use any of the materials in here without the consent of the Center and the purpose of this evaluation is to help the project itself. It has no other ulterior motive.

Remark -

These are not much too bad, except to reassure the centers that information contained in this report would be kept confidential. In fact, as is explained in these guidelines, the report that is submitted to SEAMES, after it has been completed, will be on a confidential basis.

Remark and Question -

I see, but you might have a situation or a case in which a prospective donor of funds would like to learn the true story about the project before it finally commits itself to substantial grants. And they might wish to send representatives to look into the project and therefore probably there is that probability if they knew that we have a continuing self evaluation and have, therefore, self evaluation reports which are confidential, they might wish to look into these confidential reports. Would you advise that this should not be made available to prospective donors?

Remark -

Personally, I see no harm in showing any prospective donor that we are making every effort to correct what weaknesses we have and taking steps to strengthen our program. In fact, this kind of information will encourage prospective donors, because they know that we are continually trying to improve ourselves, rather than try to sweep everything under their carpet and say that everything is fine.

Remark -

It is likely that evaluation results are usually used for adjustments in planning. Now it is likely that should the results stand out to be negative, the project may suffer certain reduction in assistance from SEAMEO. Is it also possible that should your results turn otherwise, we can also expect more financial assistance from SEAMEO?

Remark -

The question is that this self evaluation report can show one picture or the other, an adversed picture or a favorable picture. And that an adversed picture might result in the reduction of support from SEAMEO special funds. Or a favorable picture might result and in such could it be expected of the project would have bigger support.

Remark -

I must say that the support of SEAMEO is not dependent or contingent upon the kind of report you turn in. This is only a self-evaluation exercise. The support given is on the basis of your five-year program and your annual program of activities. Any increase or decrease in support is not dependent solely on this exercise but is in relation to the program that you submit on a year to year basis, within the context of the five-year program of activities.

Remark -

I think it is also in relation to the availability of funds, or the ability of people to raise funds.

Remark -

Excuse me, I was misunderstood, maybe I cut something from what I asked, I was referring to the evaluation to be made by the experts not the self evaluation.

Remark -

That, of course, we don't know how the evaluation substantially will be used, and I think the framework and conditions under which the professional evaluation is done need to be defined and carefully worked out before they are done.

Questions -

Since it is very clear now that the result of the evaluation will be considered confidential to be very useful to SEARCA, don't you think SEARCA should hire somebody from outside to do the evaluation for them? Because somebody from outside, I think, could be very objective. And they could see the problem in SEARCA more clearly than the people who are intimately involved in the program. Don't you think we should decide on this?

Answer -

It is one way of doing it. It is possible that you might get a more objective outside view. On the other hand, in the introductory parts of these guidelines we got some statement there which I believe to be very true and that is the process of self evaluation which the staff itself does have great value for the staff. In fact, I am almost prepared to say that the great value in this project is not in the final document that you produce but in the process you went through in producing it - the increased understanding of what it is you are trying to do. You increase appreciation of your judgment of your effectiveness and have to be honest. There is no fault in being otherwise. You have nothing to gain either by being too critical or by being too euphemistic about your efforts. Real, clear understanding of what you're doing, how you are doing it, how well you think you are doing it, and how good your relationships are - these are important by-products of this process. Perhaps, the real gain will be in the increased understanding on the part of the staff feeling they are a part of the project and having an opportunity to work with it.

I think these are things important in the final document you produce. There will be plenty of time for professionals to come in and take a look in terms of the end-product, you might say, rather than the by-product. That is not, however, to downgrade the value of your final product. If you do well. it's base for all future studies.

Remark -

It would be expected that there would be viances or in fact conflicts and opinions or judgments in the whole process considering that you have self evaluators and you will have experts coming in but I guess that, that is part of the process of getting at the truth, really. Because even the experts coming in may not see certain things which only those inside can see. A third party may wish to look at both judgments anyway.

Question -

Is there any advantage in having some organizations other than the center itself evaluate the statement of purpose with the goals of the organization? The purpose against which it is measuring itself might not be one or they may not be ones that are acceptable say to the SEAMES organization or to some other authority. Would it be practical to have the statement of purposes and goals discuss with the SEAMES organization before the evaluation process is completed?

Answer -

The purpose of this Organization was laid down when it was set up in support of the documents. Now, I think an important element in staff understanding is to review that those published documents have a purpose which has been set forth for you. How well are you achieving? How well do you understand it? That's an important thing by itself. Ultimately, you will need to do precisely that Mr. Cohen has said you will need to have someone outside the Organization say what should be the purpose of this Organization, or at least try to state what it is and measure it against that. But in our very real sense, regardless of what those documents say, regardless of what the Charter says, the real purpose of this institution is what you yourself do with it and put into it, and that's what you need to examine.

Remark -

Our experience tells us that for something so general takes only really one man but resulting solely would take so many more men.

Remark -

Since every centers would have its own goals, its own objectives in accordance with general objectives and goals of the SEAMEO, I would think that each center would have a way of operationally defining what its own objectives and goals would be. And then start from there in the evaluation because certainly if we go by the broad statement of objectives pretty soon we could suffer from some kind of a Messiah complex. And if we don't achieve what we are supposed to achieve, we can be frustrated. But, if we are aware of our own limitations and our own resources, human and material, and operationally defined our own objectives and goals for evaluation in terms of what we are expected to do within a certain period of time, then it would be more realistic.

Remark -

Agreed, I think.

Remark -

I think basic to this concept of evaluation is the question of statement of purposes, goals and objectives, because these things provide the benchmark for measurement of achievements over time. Our ultimate two comments are: (1) proposal and (2) question.

I think we cannot run from the regional flavor of SEARCA so that the statement of objectives become so confused — because you need three levels of objectives, of purposes, one is regional purpose or objective which takes care of the needs of the region in the member countries. The other one is institutional objective — SEARCA itself, as a training and educating institution. Thirdly, the teaching objectives which pertain to linear outcomes because I think, in the last analysis, it is the linear outcome that can be stated in measurable terms. What Dr. Davidson said about helping to improve economy in Southeast Asia which is a regional purpose cannot necessarily be a matter which can be done in measurable terms because education itself and the application of knowledge involve time. Sending a Malaysian scholar to SEARCA, getting an M.S. in Plant Pathology takes sometime for him or her to prove the benefit of his or her training back home in Malaysia.

Questions -

As a very basic question, how could these three levels of objectives be stated in measurable terms? I think it is worthwhile to discuss early this process of conceptualizing self evaluation or external evaluation. Is the statement sufficiently specific where progress can be measured? Are there technicalities involved in measuring objectives, criteria, bases? All these things come into play.

Remark -

The more broadly stated the goals are the more difficult they are to measure. To improve agriculture in Southeast Asia is so broadly stated that it is a little bit difficult to measure. On the other hand, you can make it so specific that you wonder if they are important. For example, a specific statement might be "to train or to provide 100 fellowships for graduate training in agriculture". All you do is just provide 100 fellowships. You can measure progress towards that without any problem whatsoever. So we did not attempt to set forth actual measurement criteria. This I think you yourself will have to put in terms of your goals, your ultimate long range objective which is surely the improvement of the quality of life in Southeast Asia. It may be as big and remote but nevertheless as real as that. More specifically, to do that by improving the training of agricultural leaders and so on down the line towards more and more specific gaols and try to build the measurement criteria into each of them.

Remark -

Perhaps, in the evaluation process, each segment of activities of the Center, such as instruction or research could evaluate its own objectives and goals in relation to the objectives and goals of SEARCA. Those involved in the instructional phase of the program could set their specific objectives and goals at the working level. Then, in this way, I think the picture will not be confused because we could tackle the problem of evaluation for each segment of the program. These will be clear in perspective as these are viewed in terms of the Center's overall picture of the extent to which the objectives of SEARCA are being attained. If we take such a view, then probably evaluation would not appear as a monstrous picture looming in the horizon.

I do not know what evaluation mechanics will be used by the Center, but I cite the following as an example of an evaluation activity at the working level. The persons involved in the instructional program, for instance, could have a means of periodically evaluating, with the faculty and students concerned, the progress of their instructional activities in terms of the operationally defined objectives.

This would involve a two-way process - feedback from below to the top and vice-versa; and if there's a slack somewhere down the line, the persons concerned will have to be told "to pull their muscles" a little more. I think this is an instance when those of us involved in the program can cooperate with and contribute to the evaluation of the particular projects of the Center.

Remark -

I think a little bit of imagery here will clinch the point, and that is, if we were to look at the structure of objectives we would be seeing in the end a series of inverted triangles where at the top, you see a very, very broad statement of objective and then you get down finally to a focal point down below. And that is the objective of it activity that contributes to the achievement of the broader objectives in a hierarchy.

Remark -

I think it is important in the evaluation of all these SEAMEO activities to keep in mind the SEAMEO purposes, first of all in establishing the centers and, secondly, in the case of each particular center or project activity what

SEAMEO had in mind. And to go back to the broad purposes of SEAMEO as an Organization, it is to promote regional cooperation in the field of educational endeavor and that has been broken down into three or four very specific objectives, one which pertains to SEARCA and that particular objective was to halt the brain drain, to create "Centers of Excellence" in Southeast Asia that would provide resources and facilities for graduate study and research equivalent to the institutions that are now being utilized in America, Europe, Australia and other places outside the region and, hopefully, to capture the talent that is now being sent abroad for graduate training and research; provide them more appropriate training within the region and, hopefully, keep them within the region. So it seems to me that in evaluating the goals and purposes of SEARCA one will have to go beyond the lower level of the pyramid to actual instructional objectives, or even the steps higher to the fields of specialization that are being offered and examine such things as how well are the SEAMEO member country supporting SEARCA. Are they indeed sending graduate students here or are they continuing to send them abroad, or are they providing adequate recognition for the work that's being done at SEARCA recognizing the degrees that are offered at SEARCA and giving them equivalent recognition as degrees gained abroad. In other words, in evaluating the overall SEAMEO purposes, as far as SEARCA is concerned, it seems to me that there will be an outward look as well as an inner look, and perhaps that is even more important in terms of SEAMEO purposes than the kind of evaluation that would get all the way down to the instruction objective level or even the fields of specialization. Presumably, SEARCA is operating as a service to the region to provide graduate training and research in the fields of specialization needed in the region and with research into the common agricultural problems that will be of use to the region on a much broader objective scale. Perhaps in the past the research and training program of UPCA had been geared primarily to the problems and needs in the Philippines. But it seems to me that broader purpose must be taken into account in doing a self-evaluation of SEARCA to see if it is doing what SEAMEO intended it to do.

Question -

To what extent would the educational host institution be involved in the self-evaluation?

Answer -

We strongly recommend that you involve as many of your closely cooperating agencies as you can. Your host country is not just UPCA; you are also involved with the Ministry of Education, with finance agencies; you've got a variety of relationships here. We strongly recommend that in this process you try to include them in the discussions, go over this with them, get their views on it and involve them as fully as you can.

Mr. Khoo and I will be here during the course of the next few days, and this is a document which took two months for us to put it together and we don't expect you to look at it and to understand it in half an hour this morning. You may have an opportunity to read it during the days when we are here but in case you have any points to raise during the course of the next three days, we shall be glad to talk about it. If when you get back into the study in your own Center in detail, if either of us could be helpful in coming over to work, we'll be delighted to do it with the staff.

Remark -

If there are no further questions or comments, I'd like to say something in response to your comments.

Not only would this arrangement be possible, but informally, I think on Thursday, when we will have our summing up session, a part of the period available for summing up could be devoted to this; or, in the discussion, in fact, of the papers in relation to the country statements and the SEARCA report itself, there will be time for this.

I think our academic consultative committee has created a sub-committee for programs and evaluation and that the composition of the committee will take care of the suggestions of Dr. Davidson.

COUNTRY STATEMENT

THE NEEDS AND PROBLEMS OF AGRICULTURE IN INDONESIA

The needs and problems are, of course, related to the present situation and trends of agriculture in the country.

Within the next few years there are enough evidences to believe that we will be self-sufficient in carbohydrates. There is widespread interest in the cultivation of high-yielding varieties of rice and maize, and the application of new technologies. Besides maintaining the effort for self-sufficiency in rice, we pay attention to the production of protein, from animal as well as plant sources. And further, to improve the diet of the people, we try to develop our horticultural crop production.

Besides the BIMAS (package rice program) and the National Rice Research Program, the Minister of Agriculture established the National Technical Team for Second Crops and the National Technical Team for Horticulture in 1971. The first team takes care of maize, sorghum, soybean, peanut and cassava, while the second, vegetable and fruit crops. Research has been carried out by the Central Research Institute for Agriculture, Research Institute for Horticulture and the Universities.

The problems in our agriculture are not in relation to the food crops only, but also to the expert crops which serve as source of foreign currency. More than 70 per cent of our exports come from the agricultural sector. Rubber, timber, copra, coffee, tea and cocoa are the principal export crops. Research on these crops have been carried out by Research Institutes for Estate Crops and some Universities.

Since the so-called traditional export commodities do not have a bright future due to various kinds of competition, we try to diversify our export by the development of minor export commodities or the so-called non-traditional export commodities. Our bottleneck in this respect is the lack of sufficient data to back-stop the program.

We have many problems in developing our agriculture. In solving the problems we do not have sufficient facilities and funds, and also we do not have enough highly trained and experienced research workers, both in the universities as well as in the research institutes.

To distribute the new technologies we have to improve the knowledge of our extensionists. Last year, we started to appoint an extension specialist in each province. The flow of research results to the extensionist is not so smooth due to the shortage of funds for publication of articles and books.

It will be too long if we discuss our needs and problems in detail. In this opportunity we would like to mention some of our urgent problems, which has a more or less regional character.

Food crops:

1. Borer, bacterial blight and virus diseases of rice
2. Breeding for high-yielding varieties of lowland and upland rice
3. Weed control
4. Downy mildew of maize
5. Breeding for high yield and early maturity of maize to fit the rotation system
6. Breeding for high-yielding varieties of soybean
7. Pest and disease in storage and transit for rice, maize and groundnut.

Vegetable:

1. Bacterial wilt
2. Breeding for high yielding and resistance to pest and diseases

Fruits: Greening disease of citrus

Coconut:

1. Sexava control
2. Improved method of copra drying

Black pepper: Phytophthora foot rot

Miscellaneous:

1. Control of aquatic weeds in irrigation canals, rivers, and lakes
2. Water requirement of crops

Extension:

1. Upgrading
2. Training of extension specialists

General:

1. Training and upgrading of junior research workers
2. Books on crop production and animal husbandry in Southeast Asia.

We hope that the mentioned problems, or some of them, receive the attention of the SEARCA. We would like to cooperate in solving the problems.

# # #

COUNTRY STATEMENT

Khmer Republic

Mr. Chairman, delegates, ladies and gentlemen:

Before starting my address, I would like to express how glad we are with you. We are very honored to participate in this seminar.

Besides, it is the first time that the Khmer Republic has had the opportunity to participate in the SEARCA governing board meeting. And we are certain that this meeting will bring positive results in order to reach the purposes established by SEARCA.

We are going to present to you a brief review of some of the aspects of Cambodian agriculture by emphasizing on problem of education, research and extension.

The Khmer Republic, like almost any other countries of South East Asia, has an economy essentially based on agriculture. In spite of all efforts made, during these past years, her agriculture remains insufficiently developed. However, without discouragement and in spite of the war our country is still making new efforts to speed up her agriculture development which is the foundation of our national economy.

The Khmer Republic has a total area of 18.000.000 ha. of which about 3.000.000 ha. are reserved for crop production and 13.000.00 ha. for forest. The Cambodian agriculture is clearly predominated by the rice plantation which covers more or less 85% of the cultivated areas. The actual war has destroyed a great many areas of crop production and has ravished our rubber plantation. The agrarian structure of our country is characterized by a parcelling out of land which is very pronounced in dense populated areas by properties varying from 0.5 ha. to 2 ha.

The statistical survey of the population in 1962 shows the following data:

Total population	- 5.740.000
'armers	- 4.391.000 (85%) of the total population
'otal number of families	- 1.092.000
'arm families	-840.000

'arm productivity is very low. On the average, 1.3 tons per hectare. Hybrid - selected and improved seeds, chemical fertilizers and pesticides are not widely used.

It was recognized that to obtain a certain level of agricultural development, each country must have a trained manpower and the findings of research and experimentation.

Our agricultural research exists essentially in the form of experimental trials which are done in and out of the stations to fill the immediate need of extension service. It is clear that these applied researches could not reach a high level without a parallel development of basic researches. These kinds of activities are still hindered since we lack research staff and equipment.

As a whole, agronomic study comprises three cycles of teaching. The 1st cycle is of elementary level. It admits students having finished the first part of general education i.e., having achieved their 10th year from nursery school. This study lasts for three years and leads to the Diploma of Technical Agent. The 2nd cycle is of medium level. The students enrolled must be Baccalaureat degree holders i.e., having completed 12 years of general education. This 2nd cycle lasts for 3 years and leads to the Diploma of High Technical Agent.

The 3rd cycle is of high level. This study takes place in three universities: First, in the University of Agronomical Sciences having the following six faculties:

Faculty of Agricultural Sciences
Faculty of Animal Husbandry
Faculty of Veterinary Sciences

Faculty of Rural Socio-Economic Sciences

Faculty of Forestry Sciences

Faculty of Fisheries Sciences

Second, in the Faculty of Tropical Crops of the Kg bham University located in the Kg bham province and specialization in the study of crops production on red and black soils (originated from Basalt) and crops of the Me'kong's bank. A particular field of specialization is aimed toward the rubber plantation, chemistry and technology of rubber.

Third, in the Faculty of Food Technology and Agriculture of Battambang University located in the Battambang province, the academic study leads toward the Diploma of Inginieur Agronome (French meaning) and requires one year of preparation, three years of specialization courses and one semester for thesis work.

In the high agricultural study, there are not enough full time teaching staff. Actually among 57 professors, there are 50 part-time professors.

The number of graduates averages from 30 to 50 every year. Those graduated students must be sent abroad in order to obtain the graduate level training and their return will reinforce at the same time both the research and teaching staff.

In conclusion, the development of our agriculture relies strongly on the progress of training, research and extension. Such progress could not be reached unless our country possesses a more enlarged and qualified staff to fully develop our resources and agriculture potential. And we hope the SEARCA will contribute to solve certain problems of our agriculture in training and research fields.

Thank you very much for your kind attention.

# # #

SOME ASPECTS OF CAMBODIAN AGRICULTURE

I. INTRODUCTION

The Khmer Republic like almost any other countries of Southeast Asia, has an economy essentially based on agriculture. In spite of all efforts made, during these past years, her agriculture remains undeveloped. However, without discouragement and in spite of the war, our country is making all efforts to speed up her agriculture development. Agriculture is the foundation of our national economy. These efforts are centered in the fields of education, research and extension.

In our statement we will go over the principal problems of Cambodian agriculture and the present situation concerning higher education in agriculture, research and extension. Due to the lack of time we will limit our statement on the agricultural aspect only (in its restricted meaning without touching on animal husbandry, forestry and fishery).

II. CONDITION AND PROBLEMS OF CAMBODIAN AGRICULTURE

The Khmer Republic has a total area of 181.000 km^2 of which about 2.900.000 ha. are reserved for crop production and 13.350.000 ha. for forest.

The statistical data of 1970-71 are as follows:

Total area under cultivation	2,898	(in million ha.)
Rice	2,458	"
Corn	106	"
Rubber	70	"
Tobacco	25	"
Jute	14	"
Coconut	13	"
Others	212	"

Outside of some regions of small areas along the Mekong river, Tonle Sap, Bassac and other irrigated zones, there is only one crop per year. The Cambodian agriculture is clearly predominated by the rice crop which covers about 85% of the cultivated areas.

The war which has been imposed on us, has destroyed a great many areas of crop production. It has practically cancelled our rubber production.

The Cambodian agrarian structure is characterized by a parcelling out of land which is very pronounced in dense populated areas, parcels varying in size from 0.5 ha. to 2 ha., except in Battambang province where areas vary from 10 to 100 ha. or even more are operated by lessees or share croppers.

The land distribution on the national level is indicated in the following table (1962 data):

Size of Land	Average in Percent
Up to 1 ha.	30.7
From 1 to 2 ha.	22.3
From 2 to 5 ha.	32.6
From 5 to 10 ha.	10.4
From 10 to 20 ha	3.4
More than 20 ha.	0.6

The active population which makes up about 43% of the professional structure is composed as follows:

80 to 81% in the primary sector
4 to 5% in the secondary sector
4 to 15% in the tertiary sector

The survey of the population in 1962 shows the following data:

Total population	5,740,000 persons
Farmers	4,391,000 persons (85%)
Total number of families	1,092,000 persons
Farmers' families	840,000 persons

We have just seen that in the Khmer Republic agriculture is not only the basis of national economy but it also feeds or to be more exact it permits a very big mass of the population to survive. So agricultural development is at the same time an economical and social necessity. According to some actual statistical data the annual mean of productivity for one Cambodian in 1970 can be stated as follows:

5,500 Riels per farmer
11,000 Riels per worker

29,000 Riels per industrialist
34,000 Riels per businessman

1 US$ = 55 Riels

Technically, Cambodian agriculture is not yet developed: antiquated system of land preparation, restricted use of hybrids, selected and improved seeds, chemical fertilizers, pesticides and preponderance of one cropping per year. The yields are small.

There is lack of qualified technical staff. Agricultural research and extension work are non-existent; at most, these services are at a standstill.

For better understanding, we will give now, before approaching the main subject, a brief view of our Ministry of Agriculture which has a wide range of duties in the field of agriculture and soil and water resources.

The services depending on it include:

- The directorate of agriculture
- The directorate of livestock production and animal health
- The directorate of forestry and water resources
- The directorate of fisheries
- The directorate of land registry

The autonomous organizations under the supervision of this Ministry are:

- The National Office of Cooperation
- SOCTROPIC (Khmer Society for Tropical Crops)

SITUATION OF SEASONAL CROPS
YEAR 1967-68 AND 1968-69

	CROPS	Harvested areas (Ha)		Production (T)		Yield (T/ha)	
		1967-1968	1968-1969	1967-1968	1968-1969	1967-1968	1968-1969
	I. CEREALES.						
1	- Rice	2,324,00	1,944,000	3,251,000	2,503,000	1,374	1,287
2	- Red Corn	98,100	85,200	138,200	99,300	1,408	1,165
3	- White Corn	15,000	16,800	15,800	18,300	1,050	0.089
	II. LEGUME.						
4	- Bean	51,100	58,400	29,000	31,700	0.567	0.542
	III. OIL CROPS.						
5	- Ground nut	21,200	21,600	21,100	25,700	0.995	1,189
6	- Soy bean	9,300	4,900	8,000	4,000	0.860	0.816
	IV. STIMULANT PLANTS.						
7	- Tobacco	21,600	21,600	11,800	13,700	0.545	0.639
	V. FIBER PLANTS.						
8	- Jute	4,300	6,400	4,000	6,300	0.930	0.984
9	- Cotton	2,400	6,300	2,500	6,200	1,041	0.982

- The Agricultural High School of Prek-Leap
- The University of Agronomical Sciences of Chamcar Daung (USCA)

To the above institutions must be added:

- The faculty of Tropical Crops of the Kompong Cham University which is under the supervision of the Ministry of National Education, but it is actually under the University of Agronomical Sciences of Chamcar Daung since the beginning of the war (Academic year of 1970-71).

The Faculty of Food Technology and Agriculture of the Battambang University is in the same supervisory arrangement as the faculty of Tropical Crops of Kompong Cham University.

III. AGRONOMIC TEACHING IN THE KHMER REPUBLIC

Agronomic study comprises two cycles of education. The first one of a medium level leads toward the diploma of Technical Agent or Higher Technical Agent.

The second one leads toward Agronomy degree (higher level).

1) The secondary agricultural teaching (two cycles of formation)

1.1 1st cycle:

This first cycle is of elementary level. It admits students having finished the first part of general education, i.e., having achieved their 10th year of education (from nursery school).

This 1st cycle of agricultural study lasts for three years.

2nd cycle:

It is of medium level. The students enrolled must be a Baccalaureate degree holders (i.e., having completed 12 years of general education).

This 2nd cycle lasts for 3 years.

1.2 Location:

The agricultural school of Prek-Leap is located at 6 km. from the capital city.

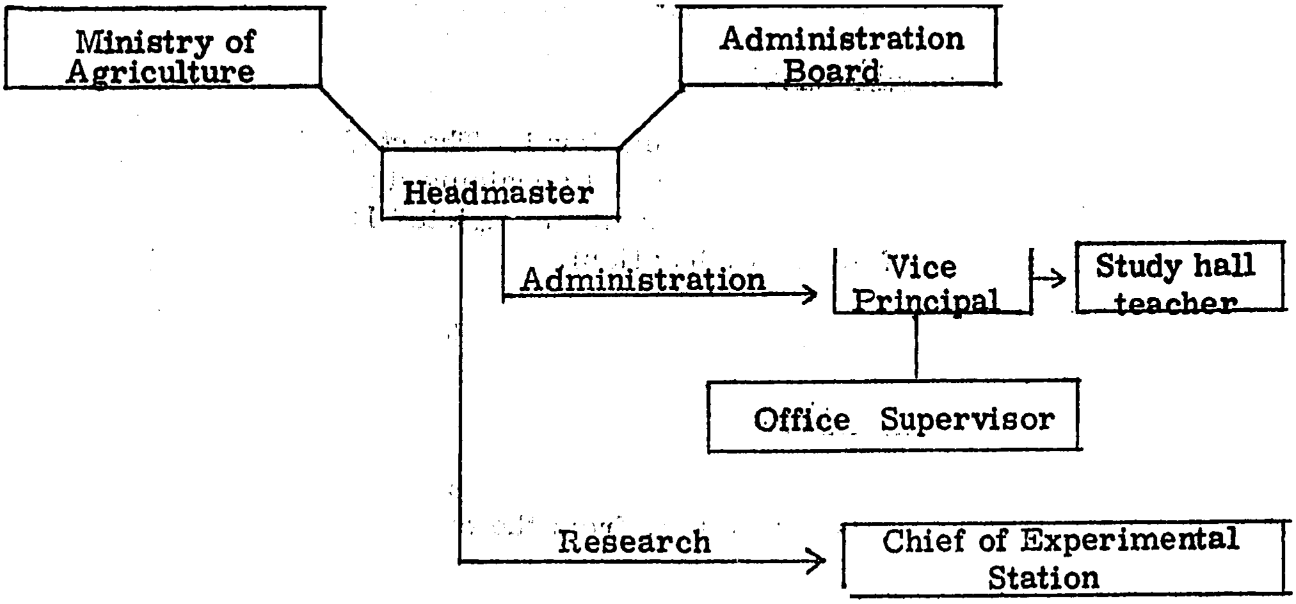
1.3 Organization diagram: (See next page)

D Details of study program:

The University of Agronomical Sciences is located at about 10 km. from the capital city, at Chamcar Daung in the province of Kandal. It has the following faculties:

- Faculty of Agricultural Sciences
- Faculty of Animal Husbandry
- Faculty of Veterinary Sciences
- Faculty of Sociology and Rural Economy
- Faculty of Forestry Sciences
- Faculty of Fisheries Sciences

The academic study leading toward Agronomy degree requires one year of preparation, three years of specialization courses and one semester or more for thesis work. To illustrate this, lets go through as an example the program of Agronomy degree.

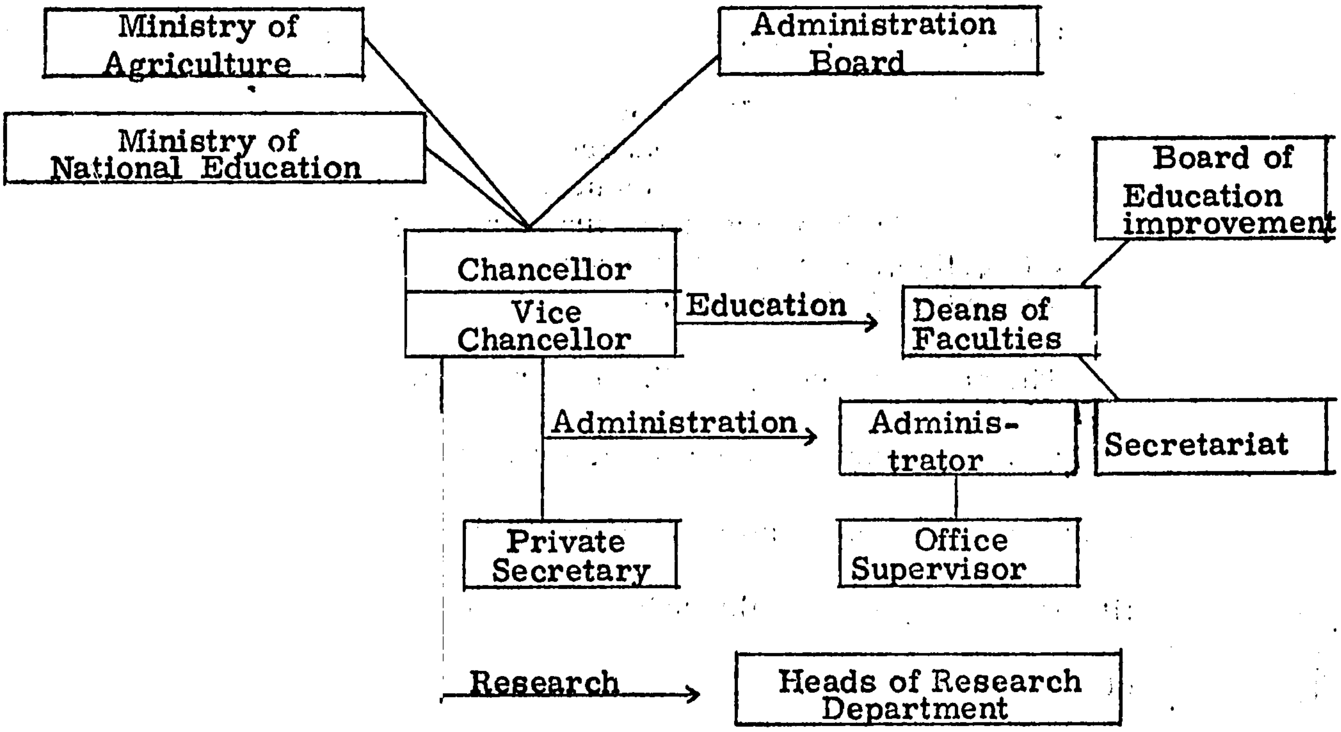


2) - Agricultural high education

This higher level of education started from 1965 on

a) University of agronomical sciences (Chamcar Daung Phnom Penh)

- Organization diagram of the University



Preparation year

The first year is a year of common study for all faculties. The weekly program of study is as follows:

Subjects	Lectures	Laboratories
Animal biology	1 hr 30'	3 hr 00'
Plant biology	1 hr 30'	3 hr 00'
Geology	1 hr 30'	2 hr 30'
Physics	1 hr 30'	3 hr 00'
Chemistry	2 hr 00'	3 hr 00'
Mathematics	1 hr 00'	1 hr 00'
Total	9 hr 00'	15 hr 30'

This makes up a total of 735 hours for an academic year.

Specialization study

These three years of specialization study include lectures and laboratory works of which the number of hours are indicated in parenthesis for each type of course.

The second year courses are as follows:

- Botany (systematic)	(30 hr30')
- General Physiology	(40, 20)
- General Soil Science	(40, 20)
- Plant Ecology	(25, 50)
- Climatology	(30, 10)
- General Entomology	(25, 10)
- General Plant Pathology	(25, 10)
- Microbiology	(15, 10)
- General Statistics	(30, 10)
- General Agriculture	(40, 20)
- General Zootechny	(40, 10)
- Forestry	(20, 50)
- General mechanical engineering	(40, 20)
- Topography	(40, 20)

- Technical drawing	(20hr 20')
- Fluids mechanic	(30, 10)
- Political Economy	(40, 00)
- English	(50, 00)

This makes up a total of 810 hours of courses per year including 580 hours of lectures and 230 hours of laboratories.

Third year

- Experimental statistics		(20hr 20')
- Genetics and plant improvement		(30, 20)
- Soil		(30, 30)
- Soil fertility		(30, 10)
- Entomology		(25, 15)
- Plant Pathology	(special)	(20, 20)
- Material resistance		(40, 20)
- Agricultural hydraulic		(40, 20)
- Mechanical		(40, 20)
- Rural construction		(40, 20)
- Agricultural industry		(30, 20)
- Rural laws		(40, 00)
- Rural economy		(50, 10)
- Bookkeeping		(30, 10)
- English		(30, 00)

Fourth year

- Rice production	(30 hr10)
- Corn production	(20, 05)
- Rubber production	(20, 10)
- Horticulture	(35, 15)
- Vegetable production	(20, 10)
- Fiber production	(20, 05)
- stimulant crops	(20, 05)
- oleaginous crops	(25, 05)
- forage crops	(35, 20)
- Administration	(25, 25)
- Sanitary	(35, 00)
- Sociology and Extension	(35, 15)
- Agricultural cooperation	(30, 00)

Faculty of tropical crops of the Kg. Cham University

This faculty is located in the heart of Kg. Cham province which is at 120 km. from Phnom Penh. This faculty is more specialized in the study of crop production on red and black soil (originated from Basalt) and crop production on the Mekong's bank.

Unfortunately, this faculty was destroyed by the North Vietnamese aggressors in 1970 and the students have been transferred to the University of Agronomical Sciences. These students are now completing their last year of study and there is no additional student enrollment because of the war.

The academic study totals up to four years and a half (one year of preparation, three years of university level study or specialization and one semester of training and thesis work).

The study program resembles more or less to the faculty of Agronomical Sciences except for the number of courses in rubber crop and technology of rubber.

Faculty of Food Technology and Agriculture of the Battambang University

This faculty is located in Battambang town, which province is located at 290 km. from Phnom Penh. Like the Faculty of

Tropical Crops, this faculty has been transferred to the University of Agronomical Sciences since 1970 because of insecurity.

In addition to one year of preparation consisting of the study of Mathematics, Physics and Chemistry, the three years of specialization include the following courses:

Second year

- General agriculture	(30hr10')
- General microbiology	(40, 30)
- General zootechny	(40, 10)
- General statistics	(30, 10)
- General chemistry	(60, 20)
- Organic chemistry	(60, 20)
- Analytic chemistry	(40, 20)
- Biochemistry	(40, 00)
- Industrial physics	(50, 10)
- General mechanic	(40, 20)
- Fluids mechanic	(30, 10)
- Industrial drawing	(30, 20)
- Political economy	(40, 00)
- English	(50, 00)

Third year

- Chromatography	(20hr10')
- Human nutrition	(30, 10)
- Industrial statistics	(30, 10)
- Food technology	(60, 20)
- Animal food technology	(30, 10)
- Analytic chemistry	(40, 20)
- Biochemistry	(40, 00)
- Applied microbiology	(20, 20)
- Industrial Food engineering	(60, 10)
- Boilers and motor	(40, 10)

- Electrotechnic	(40hr20')
- Material resistance	(40, 20)
- Industrial construction	(30, 10)
- Common law	(50, 00)
- Bookkeeping	(30, 10)
- English	(30, 00)

Fourth year

- Food technology	(40hr30')
- 2nd part of Fisheries technology	(30, 10)
- Foodstuffs analysis	(40, 20)
- Enzymology	(30, 00)
- Applied microbiology	(30, 20)
- Refrigeration industry	(40, 10)
- 2nd part of food industrial engineering	(40, 10)
- Industrial management	(50, 10)
- Financing and Banking technics	(20, 10)
- Industrial laws	(30, 00)
- Administration	(30, 00)

3) Statistics on number of professors and students

3.1 Secondary Education (1971-72)

Cycle	Number of students	Number of instructors
1st cycle	127	67 among which 11 are laboratory assistants
2nd cycle	77	

3.2 High Education

Academic Year	Number of students	Number of graduates
1965-66	32	
1966-67	98	
1967-68	202	
1968-69	384	5
1969-70	380	49
1970-71	160	37

The decrease in number of students during the academic year of 1970-71 is due to the non-appointment to the faculties of tropical crops and food technology.

There are not enough of full time teaching staffs. There are actually 57 professors, among which most of them are half-time professors.

The number of graduates averages from 30 to 50 every year.

IV. AGRICULTURAL EXTENSION

The diffusion of the agricultural technic is under the supervision of the Extension Division of the Directorate of Agriculture. This division is composed of 5 sections. It is in the early formation stage, thus there is a need for continued development of administrative and technical capabilities, to carry out the national program throughout the Khmer Republic. The Extension Division needs information materials to coordinate and support extension activities including the accelerated soil fertility program planned for 19 provinces. It produces bulletins, pamphlets, posters, circulars, letters, photographs, slides, teaching charts and flannelgraph on a mass as well as twice - weekly 15 minutes radio program with national coverage.

An information distribution system that reaches every province and village in which the Provincial Agricultural Sector and Agricultural District Agency are represented, is organized each year by this Division. It provides also guideline information for the preparation of all campaign materials. At the end of each season, the Agricultural Extension Division will incorporate the results of demonstration plots in model villages and farm into the national news.

1968: Demonstration of fertilizer use on rice

- Total number of plots	368
- Rate of application Kg/ha of	
- organic fertilizer	1.887
- urea 46% MA	65
- phosphate 20% MA	175
- Average yield T/ha	2.03
- (check plot)	1.20

1968: Demonstration of Rice Browning Control

- Trained farmers	6,060
- Total number of plots	315
- Rate of application Kg/ha of	
- organic fertilizer	332
- urea 46% active matter	57
- phosphate 20% active matter	165
- Average yield T/ha	1.40
(check plot)	0.96

A printing shop with a 15 year old incomplete equipment supports all printing requirements for the Directorate of Agriculture including its four Divisions, Agricultural Station and 19 Agricultural Provincial Sectors.

The present section of sound and film projection has no activities because of the lack of materials (documentary and films, sound and projector equipment).

The dark room with one photographer provides coverage for demonstration results and other events and developments. Prints from the negative film are made in multiple copies and distributed to the provincial agricultural sector for their public exhibitions.

The press section centralizes all the news papers and publications of the capital, sorts them out and gathers all documents relating to agriculture. In matter of agriculture, this section edits technical articles, and prepares articles for radio and publications.

Personnel

No.	Title	Graduated From	Office Work	Field Work	Need
1	Engr.	University of GA. USA,	1		6
1	Engr.	University of Agricultural Science in Cambodia	1		
14	Agric'l. Agents	Agricultural Technical School (second cycle) Phnom Penh and Prek-Leap	4	10	22
30	Agric'l. Agents	Agricultural Technical School (first cycle) Prek-Leap	10	15	44

(1) Supervised brigades for vegetable crops in the vicinity of the city of Phnom Penh during the war.

Problems

Our present problem is the lack of specialized personnel and material as audio-visual aid and transport. In the training service, we will need for the actual staff. To ensure a sufficient and intensive extension program of the cultivated areas (approximately 3 millions ha.),there should be:

6,000	agricultural agents
1,200	agricultural controllers
400	agronomists

Estimated on the basis of 1 agricultural agent for 500 ha. of cultivated area and ratio of 1 agronomist for 3 agricultural controllers and 5 agricultural agents.

The actual overall staff of the Directorate of Agriculture is composed of:

- Agronomists	69
- Agricultural controllers	177
- Agricultural agents	535

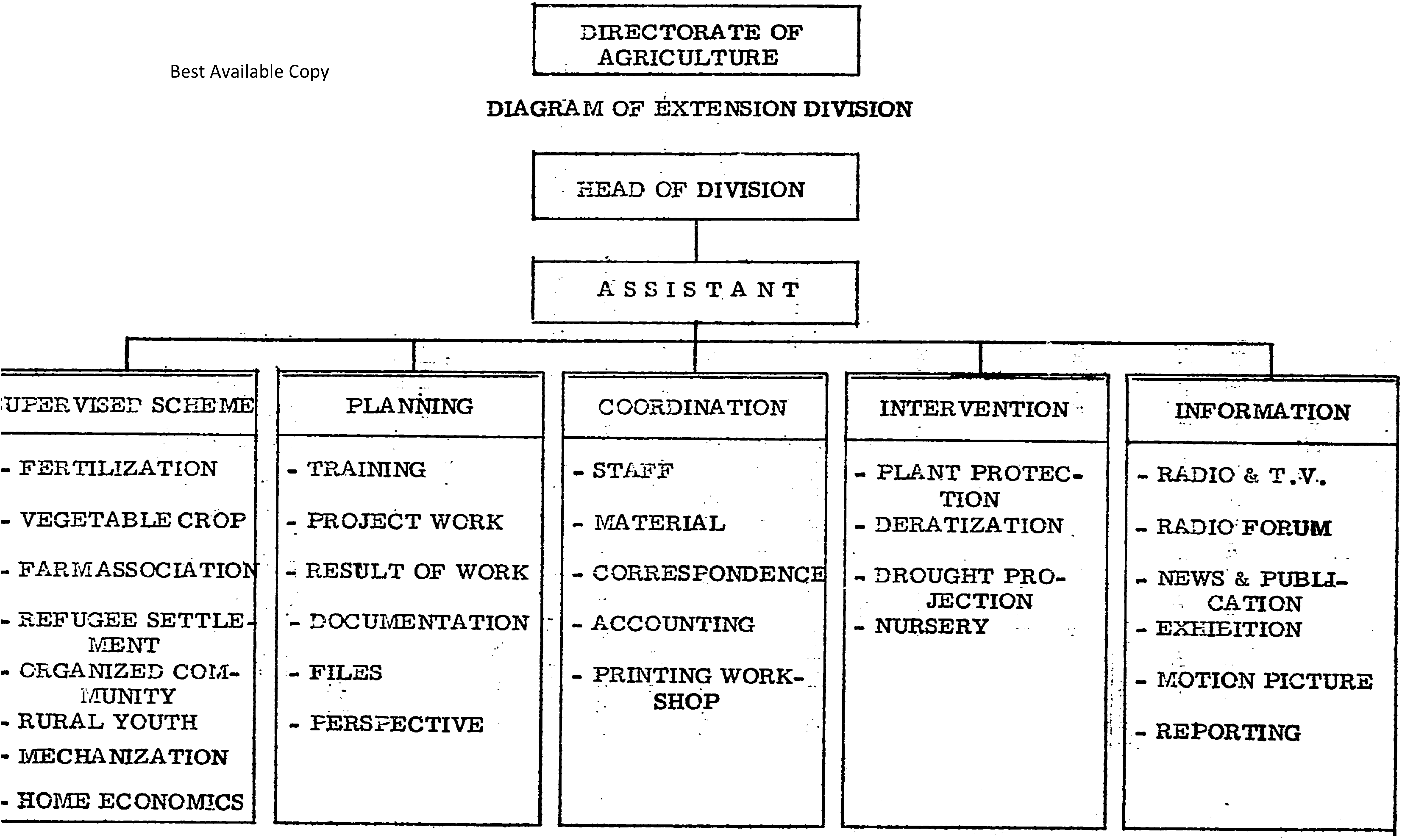
Plan

- Contribute to the printing of bulletins, posters, charts
- Reorganize the radio broadcasting program, sound recording studio and film showing section
- Prepare news scripts and production of new movie films on agriculture in Khmer Republic.

Organize the association in villages

Best Available Copy

DIAGRAM OF EXTENSION DIVISION



AGRICULTURAL RESEARCH

Agricultural research is the responsibility of the Directorate of Agriculture. Our agricultural research exists essentially for experimental trials which are done in and out of the station to suit the immediate need of extension service. It appears clearly that without a parallel development of basic research on the environment, plant material, plant protection, etc., the applied research could not progress beyond a certain level. We need deeper knowledge in the fields of soil, applied botany, crop protection, etc.

The research activities are still far short of needs because we still lack research staff and equipment.

The deficiency of our research program as stated above is located in the following three areas:

1) Financial Support:

A reasonable base in budget determination for agronomical research consists of assigning an equivalent of 1% of the agricultural product value. The actual available support for research is far off from the optimum scale. Thus, research in cereal crops (rice, maize, sorghum) would require an annual budget in the order of 25 million riels (55 riels = 1 US$), whereas the credit allocated amounts only to 11,700,000 riels per year.

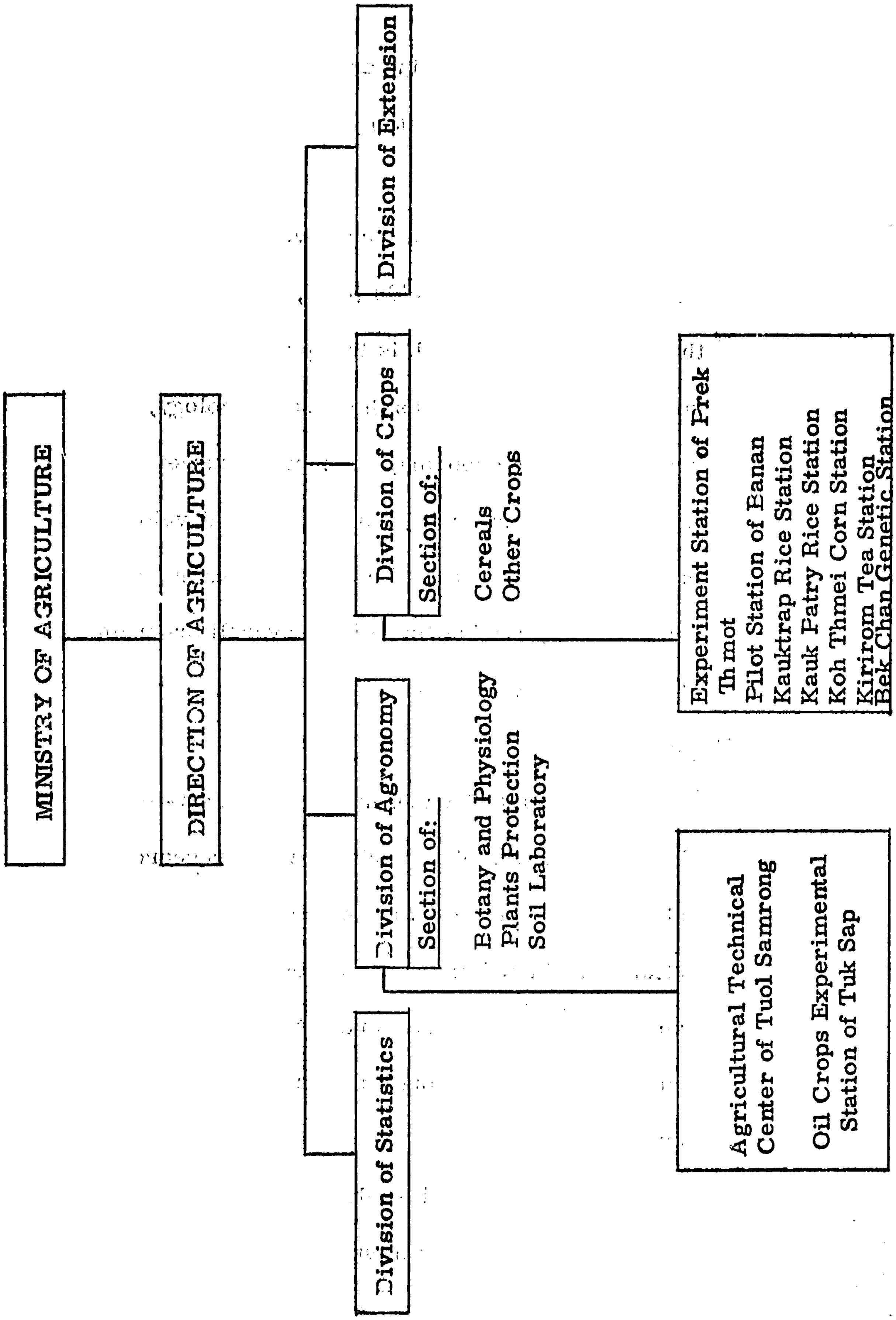
2) Staffs

There is no specific group of staffs for research. This lack does not favor the demand for research. Research work is considered as an ungrateful profession because there is no chance for promotion. For greater efficiency, it is a requisite that the group of research and technical staffs be permanently engaged for research activities and that they be recognized and given due recognition in terms of increased remuneration.

Besides, the staff assigned to do research is still insufficient in number. There are actually over a total of 24 engineers with B.S. and M.S. degrees.

3) Structure and program

Our research structure is not well developed. There is not any central organization which is capable of examining research projects, determining the priority order, organizing the work, coordinating


MINISTRY OF AGRICULTURE
DIRECTION OF AGRICULTURE
Division of Statistics
Division of Agronomy
Section of:
Botany and Physiology
Plants Protection
Soil Laboratory
Agricultural Technical Center of Tuol Samrong
Oil Crops Experimental Station of Tuk Sap
Division of Crops
Section of:
Cereals
Other Crops
Experiment Station of Prek Thmot
Pilot Station of Banan
Kauktrap Rice Station
Kauk Patry Rice Station
Koh Thmei Corn Station
Kirirom Tea Station
Bek Chan Genetic Station
Division of Extension

the institutions, promoting and encouraging new research work, and checking the application of research policy.

Our program of research is very limited and unbalanced. In some fields (rice, rubber production) the program of research is fairly adequate but in some other fields such as the case of ecology, new possibilities for cropping, economical survey and farm management, research is not well developed or does not exist at all. There is a grouping of research projects but there is no overall program of research in the country.

) Objective

On the basis of actual needs, our short-term objective consists of gathering various research activities into one modest center of research, better coordinated and working actively for its expansion by training research staffs in different fields and by working out a realistic program for development.

Our organizational needs presented in the tables represent the minimum to be realized in these 5 or 6 coming years. One can notice the big need in technical staffs to be fully filled. The schedule of staff development will not be able to satisfy the needs in the future.

The agricultural teaching staff is supported by the research staffs and vice versa. The return of specialized staffs from abroad will reinforce at the same time both the research and teaching staffs. The training of technicians can thus be accelerated according to the needs.

The research organism planned will include:

Two divisions: 1) Division of Plant Protection
2) Division of Botany

The following divisions are to be incorporated in the future:

1) Division of Soil
2) Division of Plant Technic
3) Division of Genetics and Plant Improvements

Structure of Research Organism

For two divisions anticipated:

Minimum number of technicians:

11 Engineers
33 Controllers of Agriculture

A. DIVISION OF PLANT PROTECTION

Total number of staffs	- 5 Engineers - 15 Controllers of Agriculture			Equipment and Material
Sections	Total	Already abroad	To be sent abroad	(e)
(a)	(b)	(c)	(d)	
1. Entomology	2	1	1	a. Optic instruments
2. Plant Pathology	2	1	1	b. Collection equipment
3. Pharmaceutic Plants	1	0	1	c. Raising equipment
				d. Laboratory for pharmaceutic plant

B. DIVISION OF BOTANY

Total number of staffs	- 6 Engineers - 18 Controllers			Equipment and Material
(a)	(b)	(c)	(d)	(e)
1. Botany systematic	3	0	3	a. Herbarium equipment
				b. Optic instruments
2. Physiology	3	2	1	c. Plant analysis equipment
Total ------	6			d. green house

For the three new divisions to be added:

Minimum number of technicians:

22 Engineers
58 Controllers of Agriculture

C. DIVISION OF SOIL

Total number of staffs	- 8 Engineers - 24 Controllers			Equipment and Material
(a)	(b)	(c)	(d)	(e)
1. Prospection and mapping	3	2	-	a. Prospection and mapping equipment
2. Soil Physics	1	-	-	b. Laboratory equipment
3. Soil Chemistry	1	1	0	c. Collection equipment
4. Soil Biology	1	-	-	
5. Soil Agronomy	2	-	-	
Total ------	8			

D. DIVISION OF PLANT TECHNIC

Total number of staffs	) - 10 Engineers) - 30 Controllers of Agriculture				Equipment and Material
(a)	(b)	(c)	(d)		(e)
1. Cereals	2	0	2	a.	Soil prospection equipment
2. Textiles	2	1	1	b.	Irrigation equipment
3. Oil plants	2	1	-	c.	Equipment for pesticide
4. Stimulant and medical plants	2	0	2	d.	Equipment for seed storage
5. Horticulture	2	1	1		
Total -------	10				

E. DIVISION OF GENETIC AND PLANT IMPROVEMENT

Total number of staffs	) - 2 Engineers) - 4 Controllers of Agriculture				Equipment and Material
(a)	(b)	(c)	(d)		(e)
1. Genetic	1	1	0	a.	Optic instrument
2. Plant improvement	1	0	1	b.	Instrument for cultivation and seed storage equipment
Total --------	2				

N. B. Complementary training need :
1 Engineer in Biometry
1 Engineer specializing in radio isotope
with appropriate equipment

CONCLUSION

The development of our agriculture relies strongly on the progress made in the fields of Research and Extension. Such progress could not be reached unless our country possesses a more important and qualified technical staff, that means education conditions for a large part for full development of our resources and agriculture potential.

COUNTRY STATEMENT

LAOS

GENERAL FEATURES

In Laos, as in other parts of Asia and the Far East, there has been and there will continue to be in the forseeable future, heavy investment, in agricultural development to produce the additional food required by expanding population requiring and expecting a better standard of social, economic and nutritional condition of living. The main objective is to have self-sufficiency in food production especially in rice.

This joint seminar/meeting will strive to focus your attention on this critical area in food production.

I. General Situation

Laos lies between latitude 14° and 22°30' north and within a geographical area once known French Indochina. The country is land-locked and covered an area of 91.000 square miles (236.800 square kilometers), divided into 16 provinces some of which are now under control of the Pathet Lao. Only 900.000 hectares are under cultivation or about 4% of the total land area.

A population estimated at 3 million people and a population density of 30 per square mile. Laos is a mountainous country with a mean annual rainfall range of 50 to 90 inches.

About 85% of the population live in rural area and are engaged in subsistence farming. Security and refugees pose special problems in the over-all economic development of Laos. According to the figure given by the Ministry of Social Welfare there are more than 800,000 refugees. The Royal Government of Laos, with assistance from the U.S.A. and other countries, has undertaken an extensive program of acceleration of agricultural development particularly of rice production, so that Laos can move toward self-sufficiency.

II. Agricultural Production Trends

Both social and economic environment made Laos import rice to meet its domestic needs. This has resulted largely from the security situation and the accelerated movement of people from the rural to the urban centers and to the military services. In the latter parts of 1966, 1968, 1969, 1970 and 1971, Vientiane and Southern Laos were severely affected by floods from the Mekong River.

In 1964. the Roval Lao Government initiated an increased rice production program. Initial emphasis was placed on the selection, multiplication and distribution of improved local rice varieties to farmers. Following the disastrous 1966 flood, improved high-yielding non-photo-sensitive varieties were imported from Thailand, Taiwan and the International Rice Research Institute in the Philippines. Most of imported varieties such as IR5, IR8 and C-463, except IR253 — 100 are ordinary rice varieties which are only consumed by the foreign community. There is a limited demand for ordinary rice from the indigenous population in the form of noodles, sweet and rice flow products. The indigenous population of Laos are primary consumers of glutinous or sticky rice. So the demand for glutinous rice is high compared to the demand for ordinary rice.

Generally, Laos just like the other Southeast Asian countries, possesses characteristics ascribed to underdeveloped economies.

- Lowincome due to low productivity of the resources
- Inadequate transportation, poor communication
- No other source of income

- Limited sizes of local markets which are far from the production sites
- No security

In order to achieve the objective of self-sufficiency in rice, the government launched a program aimed to increase rice production.

Farmers' demonstration and research trials were established at the same time in an effort to further evaluate the adaptability and acceptability of improved varieties under Lao conditions and to provide technical guidance to farmers. The Agricultural Development Organization (ADO) has dramatically increased its role by providing both inputs credit to farmers to assist them in production.

III. Crop Land

Lao government has reported about 900.000 hectares under cultivation or about 4% of the total land area. About 700.000 hectares are paddy land and 200.000 hectares in upland cultivation.

IV. Major Crops

Rice
Corn
Tea
Coffee
Tobacco

V. Land Tenure

Virtually, nothing can be stated that would apply universally throughout Laos concerning the ownership of the land resources. While the Royal Lao Government attempted to clarify the rules and regulations governing the use and ownership of land during the early days of independence, it has been generally ineffective in the uniform administration of these laws throughout the kingdom.

Tenancy is not considered to be a problem in Laos. A closer look at the problem will show that this could become an issue, and one of the inhibiting factors contributing to the economic development of Laos, particularly in area close to urban centers.

The cost of land rent varies greatly but appears to run from 30 to 50% of the annual production. Likewise, there seems to be considerable variation in the share of the inputs the landlord and the tenants provide for their respective portion of the crops.

Laos still has relatively important land areas which are underdeveloped and owned by the state, and can be acquired for agricultural or other purposes.

Technically, all land is owned by the government unless private ownership is registered with the Ministry of National Economy. Accordingly, the state's property can be granted for the establishment of agricultural, industrial or commercial enterprises by:

a) Granting a cultivation permit

The cultivation permit can be issued only to Lao citizens and for a maximum of 5 hectares per permit. The duration is limited to ten years.

b) Free concession

The free concession can be granted only to Lao citizens. The areas are established at 5 hectares for rice, 10 hectares for vegetable and fruit crops and 30 hectares for livestock.

c) The chargeable concessions

The chargeable concessions can be granted to Lao citizens as well as to legal entities of which the capital is subscribed in majority by Lao citizens. The area is established at a maximum of 1.000 hectares.

d) Lease concession

A lease concession for a duration of less than thirty years can be granted on a fee basis to Lao citizens or foreigners for a maximum area of 200 hectares for crops and 10,000 hectares for livestock, subject to the authorization of the Ministry of National Economy regarding foreigners

VI. Farm Mechanization

The history of farm mechanization in Laos is short and limited in scope. There were a few tractors imported into Laos prior years but there is little to substantiate the extensive use in agriculture; however, mechanization is beginning to be considered in the production of rice.

The principal source of power remains the same which has existed in Laos for centuries, the buffalo.

VII. Transportation and marketing system

Adequate transportation and communication are essential for the economic development of a country like Laos which possesses both political and natural barriers to trade.

Roads and rivers are the major means of transportation between the rural and urban sectors.

Two of ten such communities are isolated from villages only a few kilometers away. Relatively short distances become significant in determining the economics of transporting agricultural commodities to consumption areas.

Whilst marketing is a factor to be considered before initiating the production of crops, the natural barriers to trade in Laos are so immense that without massive investment in roads and other forms of transportation certain sections of the country will never be economically integrated with the rest. Without adequate roads within homogenous geographical areas an efficient marketing system cannot be developed.

Traditionally, farmers have been conditioned to the lack of markets and reacted in the expected way by not producing more than a subsistence requirement. Thailand's marketing system has been an inhibiting factor in the development of an effective Lao marketing system, particularly in the deficit areas.

VIII. Gross National Product

The G.N.P. per capita as reported is $70. For average family of 7.48 persons this would mean a total family income of almost $525. The G.N.P. of the monetized sector of the RLG controlled areas increased while that of the rural sector decreased during the same period of a study.

IX. Agricultural Extension

The extension service was delegated the responsibilit for the general diffusion of the agriculture information to the rural sector.

The goals of agricultural development provided the foundation of the purposes of agricultural extension:

a) To establish a production-oriented field extension service adequately staffed in these development areas which have the greatest economic growth potentialities considering accessibility to consumer markets, transportation and security.

b) To assist and motivate Lao farmers and their families to improve their economic status and home environment through increased production, better nutrition and improved household management.

c) To administratively and technically upgrade extension proficiency to a level capable of developing and implementing programs including continuous educational training for field agents and farmers.

The concept that extension agents must work directly with farmers requires sufficient personnel to reach most farmers and that the personnel must be well versed in subject matter.

During fiscal year 1969, the number of nutrition, clothing and handicraft demonstrations were increased primarily because home agents were first put through an eight-week training course covering subject matter and method as to how to organize and carry out a training program.

The extension program of work for 1969 was concentrated in the following areas:

a) Upgrading extension agents' technical competence. This was accomplished through the training program. For in-service training, a two-week course attended by 115 agents and a six month rice production course offered at Salakham Station and through participant training in the U.S., Thailand and the Philippines were undertaken.

b) Increasing agricultural production. This was accomplished through six days farmer-leader training courses, 96 rice production demonstrations, farmers' tours to observe rice demonstration, vegetable garden program in schools, and working with farmers to promote improved varieties and the use of fertilizers, etc. . . .

c) Stressing home economics activities. This activity included 73 nutrition demonstrations in which 873 women participated, 78 in clothing construction, and the in-service training of home agents in subject matter and techniques necessary to carry-out the demonstrations.

X. Agricultural Research

Assistance is prodivided in crop research in developing and executing an applied research program aimed at improving seed varieties and increased production.

In support of rice and vegetable production, assistance is provided in developing and maintaining experimentation facilities for fertilizer and rice variety trials, seeding method, and for seed certification and multiplication purposes.

The Salakham Experiment Station has become a center of rice adoptive research and basic seed multiplication.

More important, it is a center for the teaching of rice technology. The program of instruction adopted at the station simulates that of the IRRI. Training program to date is undoubtedly the most valuable result originating from this project.

The program of work can be summarized as follows:

a) Five hundred and seventy rice variety selection, including both glutinous and white, were tested.

b) Fertilizer response trials were conducted.

c) Rice disease control trials were conducted at the central research station.

d) Numerous training courses were conducted by the research staff.

These included a six-month training on rice production; a two-week course in seed technology, multiplication, certification; a two-week seminar on program planning and evaluation for experiment station; two-week rice technology course for participants returning from studies abroad and one-month course for new recruits from the Agriculture School (Hat Dok Keo), headed by M. Vonavong [The school has become the College of Agriculture (ERASP)]. In the future this college will offer high degree programs from which the graduate student participants in SEARCA will come.

XI. The Agricultural Development Organization (ADO)

The ADO program has three goals as follows:

a) To establish a rural credit system

b) To establish a marketing system for agricultural production inputs

c) To establish an improved marketing system for surplus rice production

The ADO was organized in 1965 with an atmosphere of uncertainty, uncertain of the specific program content to be undertaken; uncertain of the supply and demand situation for production inputs such as fertilizers and insecticides; uncertain of its eventual role in marketing activities, uncertain of type of organization which should be developed but reasonably certain that it had a role to play in the distribution of commodities and the extension of credit for these inputs.

The connotation derived from the above stated goals:

- Purpose is to increase agriculture production.
- Promote the establishment of an efficient marketing system for agricultural products.

- Provide necessary credit for the purchase of production inputs and promote the establishment of an organized credit system.

The ADO has established an agro-business organization capable of providing credit to farmers in support of the rice vegetables and livestock programs and assuring farmers of a market at a fair price for increased production, and to back stop these program by:

- Acting as financier of rice program
- Providing commodities such as fertilizers, insecticides, seeds, hand tools, etc. ... for cash or credit
- Conducting investigations and surveys of economic conditions which will provide data for better planning and implementation of agriculture projects.

XII. Needs and Problems

In the agricultural development, Laos has many limiting factors:

Security

Refugees (resettlement)

- Inadequacy of infrastructure

The main problems at the farm sector level:

- Low price of farm products
- Too high cost of inputs
- Few and small size of market for farm products
- Inadequate water control and transportation facilities
- Low productivity
- Lack of knowledge
- Security of credit
- Labor shortage
- Lack of trained manpower for extension work

XIII. Long-term Country Plan for Agricultural Development

The basic objective is to move agriculture from subsistence to commercial farming. Emphasis is directed at increasing agricultural production for available markets at prices that will assure Lao farmers an economic return from their labor, and risks. The agricultural development program is directed toward the following:

a) Accelerated extension programs to increase farmers' technical and managerial capabilities

b) The encouragement of larger farm units through the introduction of labor saving devices, efficient use of capital and equipment

c) Selection and introduction of crops adaptable to local environmental conditions and market potentialities

d) Expanding of irrigation facilities and efficient water usage

e) Introduction of agricultural processing facilities with special emphasis on those agricultural products that can compete economically

f) Financing agricultural enterprises by giving more credit to farmers

g) Training farmer leaders

XIV. Areas in which Assistance from SEARCA might be useful

Laos has many production, processing and transportation problems inhibiting the domestic exchange of agricultural commodities. Agricultural projects which are economically feasible within Laos should be given priority in the use of resources available for development. The SEARCA could assist Laos in making feasibility studies which would provide the country with criteria on which to establish appropriate priorities on the use of resources.

Once priorities are established, fund or budget must be acquired to finance the development of needed commodities and to carry out some important activities within the framework of SEARCA's regulations:

a) Training of agricultural extension and research agents

b) Conducting research studies on crop diversification

c) Crop and animal production

d) Assisting in the refugees resettlement by means of agricultural development

e) Creating in ERASP a center of production of seeds and improved stock of cattle, poultry and hogs for further dispersal among refugees and Lao farmers

f) To help carry out the essential and priority projects

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COUNTRY STATEMENT

MALAYSIA

THE NEEDS AND PROBLEMS OF AGRICULTURE WITH PARTICULAR REFERENCE TO HIGH-LEVEL MANPOWER RESEARCH AND PUBLIC SERVICE (EXTENSION) REQUIREMENTS

1. Introduction

The agricultural sector occupies a dominant position in the Malaysian economy. It generates one-third of the Gross Domestic Product (GDP), provides employment for nearly one-half of the working population and accounts for about 50% of the countries foreign exchange earnings. Agricultural development has been substantial in recent years with rapid increases in rubber production, expansion of oil palm acreage and double cropping of rice, marked increased in fish landing and a high rate of forestry development and exploitation. Under the Second Malaysia Plan (1971-75) the modernization of agriculture will be accelerated to contribute to the objectives of eradicating rural poverty by raising income levels and generating greater employment opportunities and restructing society to correct economic imbalance. In addition, the modernization of agriculture will create new opportunities for the development of agro-based industries. The existence of abundant land, forestry and other resources makes possible further rapid overall development in agriculture leading to a widening and strengthening of agricultural base with higher farm incomes and productivity.

2. Objectives of Agricultural Sector

The dominance of agriculture in the Malaysian economy mea that the achievement of the Second Malaysia Plan objectives depen greatly on developments in this sector. A goal is to bring about th modernization of agriculture so that incomes in modern agricultur occupations will be comparable with those in urban areas. The modernization process will also contribute to the integration of ag culture with modern activities in commerce and industries. This will create economic and social environment in rural areas and smaller towns that will facilitate the development of a dynamic agricultural sector. To this goal the current Development Plan is intensifying measures:

(a) to increase employment opportunities through the sound exploitation of Malaysia's land, water and timber resources;

(b) to raise worker incomes by increasing productivity and the scale of operation, particularly among the more traditional activities where incomes are lower than in other sectors;

(c) to expand the range and quantity and improve the quality of agricultural products, particularly foodstuffs (including fruits and vegetables), commercial crops and livestock product; and

(d) to strengthen institutions such as Farmers' Associations which promote fuller participation of rural residents in economic and social life of the nature.

3. Manpower Requirements

The creation of productive employment opportunities is an important element in the present Development Plans strategy to eradicate poverty and to correct racial economic imbalance. Job expansion at a rapid rate is necessary for the absorption of greater number of Malays and other indigenous people into modern sector employment, for sizable increases in incomes in rural areas and for a significant impact to be made on urban unemployment and poverty.

Expansion of the public sector has created an accelerated demand for high-level manpower, particularly in education, health services and agricultural research and extension. The shortage of personnel exists at all the three levels namely, the professional, sub-professional and operative levels. The output of trained personnel from concerned institutions, such as the College of Agriculture and the Agricultural Institutes[5] has been insufficient to keep up with the increased demand for extension personnel. For example, the national requirements for extension field operatives for the period 1971-75 is estimated at 2,000 persons, while the output from the three existing agricultural institutes as well as the three new ones under construction during the period is anticipated to be about

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[5] Formerly known as Agricultural Schools.

1,000. The shortage may be eased by special training programmes of field assistants for land development.

Similarly, the requirements for supervisory personnel (diploma holders from the Serdang Agricultural College) numbers about 1,800 for the 1971-75 period, and yet the anticipated output during the period is only 1,100. The drastic increase in intake beginning 1971 may, however, ease the shortage of sub-professional personnel.

High-level agricultural manpower (professional personnel) is also in very short supply as a result of the accelerated demand by the technical division in the Ministry of Agriculture, particularly MARDI (Malaysian Agricultural Research and Development Institute), FLDA (Federal Land Development Authority), RRI (Rubber Research Institute) and the Agricultural University which shall come into operation in early 1973. A part of the shortages are being met from foreign sources under technical assistance programmes, but, to the extent that the shortages persist the activities of MARDI and other institutions are likely to be curtailed.

4. Agricultural Research

All programmes of agricultural research are vested in MARDI (The Malaysian Agricultural Research and Development Institute) established in 1968. The main emphasis in MARDI's research programme will be the improvement of production practices and marketing opportunities for oil palm and cocoa, soil and water management research and rice production research. Priority will also be accorded to diversification crops, including tapioca, maize, sago, soya bean, cashew nuts, vegetables, fruits and sugar cane. Research will be undertaken on livestock improvement, particularly beef cattle, and on production economics and marketing.

Some of the research facilities of the Ministry of Agriculture and Fisheries have already been transferred to MARDI and new facilities will be developed where necessary. The new headquarters at Serdang will be used to coordinate applicable background research, to extend technical services to the Government and other organizations and to provide liaison with industry groups. The Northern Regional Research Centre at Bumbong Lima will concentrate on rice, rotation crops and water management. A Southern Regional Research Centre will be constructed in Johore for research on a wider range of crops, soils engineering, crop protection and livestock. Other facilities will be developed for research on cocoa, pineapple and coconut.

MARDI will develop effective working relationships with Sabah and Sarawak. While research activities will be conducted by existing organizations in the two States. MARDI will provide research specialists for mutually agreed projects, furnish essential equipment and provide training opportunities for East Malaysian personnel.

The major factor limiting efforts to strengthening agricultural research in Malaysia is the shortage of qualified Malaysian research workers. Overall demand for agricultural scientists with post-graduate training exceeds supply. To meet its requirements for qualified scientists, MARDI is embarking on an ambitious and comprehensive training programme. It will provide scholarships to potential research workers for courses leading to B. Sc., M.Sc. and Ph. D. degrees in Malaysian and foreign universities. MARDI will also sponsor trainees at the diploma and certificate levels.

5. Livestock

In the pig and poultry industries emphasis will be on increasing efficiency, to place these products within the price range of low-income consumers and to enhance their competitiveness in export markets. For ruminant livestock, the focus of development efforts will be to provide the technical and infrastructural base upon which to build an efficient industry. Central to this will be the extension of research facilities, expansion of breeding schemes, development of grazing reserves and artificial insemination services, establishment of new veterinary centres and multiplication units and expansion of training facilities.

The Veterinary Research Institute at Ipoh will be expanded to carry out applied animal health research. A parasitology unit will be established together with regional laboratories in Penang and Johore and twelve more veterinary centres/sub-centres will be built. The training facilities at the Veterinary Training Centre at Kluang will be expanded. The Central Abattoir has been constructed at Batu Tiga in 1971.

A major constraint on rapid expansion of the ruminant livestock industry in Malaysia is the shortage of productive breeding stock. To alleviate this difficulty and following the recommendation of an FAO/IBRD livestock project identification mission in 1970, three cattle multiplication units will be established in West Malaysia and multiplication facilities at the Kluang Station will be expanded. These units will help produce improved stock in large numbers for the development of a large-scale cattle and dairy industry. They will also provide useful opportunities to test under commercial conditions research results relating to animal health and managemen pasture and forage production. The FAO/IBRD mission also recommended a pilot beef project in Sabah. A detailed feasibility study of the project, financed by the New Zealand Government, is now being undertaken.

6. Development of Food Technology

Food Technology is being given urgent attention and all programmes in this respect are entrusted to the Division of Food

Technology in the Ministry of Agriculture and Fisheries, established in 1966 with the assistance provided by the UNDP Special Fund. Research work at the Research Centre (located at Serdang), emphasizes cereal technology, fruit and vegetable technology, food analysis and control and food packaging. Activities currently undertaken by the Centre include research on handling, storage, utilization, processing and the technical aspects of marketing of local raw and processed foodstuffs. Two field stations are being constructed in the northern state of Kedah, of which one will undertake research on poultry dressing, packaging and marketing and egg storage and marketing. The other will carry out research on padi drying, milling and storage, production of rice bran oil and compounding of animal feeds from defatted rice bran.

Two other field stations will be established in the southern state of Johore which will undertake research on raw materials such as tapioca and sago for the production of starch and sugar products, and on the development and utilization of coconut and palm oil products. Officers are now being sent abroad for training in specialized fields.

7. Agricultural Extension Service

It has been universally accepted that the philosophy of extension is based on the concept of helping people help themselves through education. It is the process of teaching rural people how to live better by learning ways to improve their farm, home and community institutions. Extension is concerned with the dissemination of ideas in the form of technology to rural people and the promotion of action that leads to their adoption for improved agriculture and community living. It is a wide concept which embraces the development of human resources, changes in community institutions and changes in the physical environment.

Thus, transmission of new and useful technology to farm families is but one of the functions of agricultural extension. The more important task of extension is to develop the capabilities of rural people so that they are able to make rational decisions about their problems, needs and wants and the ways and means by which they could improve their level of living through their own efforts and available resources. It is this concept of agricultural extension which fits the context of rural Malaysia and it is based on this that extension programmes are carried out in Malaysia.

The main aim of agricultural extension is to teach farmers the use of new techniques and practices, so that by so doing, farmers could improve their agricultural production and incomes. The extension programme in Malaysia, therefore, constitutes a multi-pronged attack on rural problems focussing on the improvement of the farm, the home, the women-folk, youths and girls, and the community as a whole.

Agricultural extension programmes in Malaysia come under three categories namely, (a) farm improvement programme, (b) rural youth programme, and (c) home improvement programme.

(a) Farm Improvement Programme

The programme is designed to increase farm productivity and includes such efforts as promotion of double cropping of padi, cash cropping, crop diversification and crop rehabilitation and replanting schemes. These programme activities, as far as possible, are carried out in selected "development areas" within the framework of farmers' associations. It is through the farmers' associations that agricultural inputs and expertise are channelled to the farmers.

More specifically, the programme includes training of farmers in farm mechanization at farm mechanization training centres to cope with the expanding demand for technological skill and with increasing employment opportunities in the rural areas. In addition, short formalized courses for adult farmers and youths are conducted at 20 agricultural training centres in practical farming methods. These courses have been very effective in improving agricultural techniques among the small holders.

(b) Rural Youth Programme

The youth programme is aimed at equipping youths with a wide range of requisite agricultural skills to prepare them for farming vocations. It is a positive step to reduce the unemployment among youths, particularly in the rural areas.

One important aspect of youth extension programme is the training of rural youths in farm mechanization carried out at the farm mechanization training centres to prepare them for employment as tractor operators and mechanics. Another important programme is the formal training of youth in practical agriculture at the various agricultural training centres so that they could become more efficient farmers when they return to their Kampongs. Recently, a more positive approach has been embarked in regard to youth programme; that is, to emplace the youths in land schemes where they are given plots of land to work on and derive their income. In the initial stages, the Government provides subsidies to meet operating costs.

(c) Home Improvement Programme

The crucial role of farm women in the development of a rural community cannot be over-emphasized. The rural women are not only involved in all aspects of farming operations but also in the decision-making process. Such being the case, the development of farm women and the home cannot be separated from the overall development of the farming community.

Efforts in the home improvement programme include kitchen gardening, cash cropping, nutrition, and home management.

8. Problems of Agricultural Extension

Agricultural development is a complex process. It involves a multiplicity of social, economic, technological and institutional factors. Progressive agriculture necessitates a process of technological change, a change from traditional subsistence farming to a more viable and commercialized industry.

The problems of Malaysian agriculture are many. Institutional problems like land tenure systems, inadequate credit and marketing facilities are perhaps the outstanding ones. The problems of uneconomic holdings, low productivity, low level of technology and low incomes are as much known in Malaysia as in many developing countries. However, in this paper attention is focussed on problems that have direct bearing on the implementation of agricultural extension programmes.

The main problems confronting agricultural extension service in Malaysia are as follows:

(a) Shortage of Personne

Extension service in Malaysia requires four types of personnel, namely, (a) extension administrators, (b) extension specialists, (c) extension supervisors and (d) field level operatives or the bona fide extension workers. The shortage of extension personnel, particularly, the supervisory staff and field operatives has hindered the accelerated implementation of agricultural extension programmes in Malaysia. The output of trained personnel from concerned institutions, such as the College of Agriculture at Serdang and the Agricultural Institutes has been insufficient to keep up with the increased demand for extension personnel. For example, the national requirement for extension field operatives for the period 1971-75 is estimated at 2,000 personnel, while the production from the three existing agricultural institutes as well as the three more under construction during the period is anticipated to be about 1,000. The deficit of 1,000 field operatives will have to be met by some form of crash programme regarding which positive action has been initiated by agencies concerned.

Similarly, the requirement for supervisory personnel (diploma holders from the Agricultural College) numbers about 1,800 for the 1971-75 period, and yet the anticipated output during the period is only 1,100. The drastic increase in intake beginning this year (1971) may, however, ease the shortage of supervisory personnel.

The critical shortage of field operatives (called Junior Agricultural Assistants) has already had adverse effects on certain agricultural programmes during the First Malaysia Plan; and therefore, continued shortage under the Second Malaysia Plan may have further stagnating effects on certain extension programmes at the ground level.

(b) Resistance of the Rural Communities Towards Change

In Malaysian rural society traditional belief, social values and attitudes have vast influence on peoples' mode of life; and where education is bordering on illiteracy, cultural inhibitions tend to gain the "upper hand", thus closing the avenue for technological innovation. Traditional beliefs and values mitigate against progress to the extent that they dampen or even kill initiative. It paves the way for the preponderance of the "fatalistic view" and "self defeatism" which too often become manifest in the axiomatic, "If it's God's will - so be it". All these constitute what is popularly known as "resistance".

While it is impossible to rid rural society of its traditional beliefs and value, it is pragmatic, however, to make farmers understand the value and practicability of modern agricultural technology. In our extension efforts to change the attitudes of farmers to accept new technology, publicity and campaigns alone will not suffice. Farmers will only adopt new technology if they are convinced and sufficiently motivated, and if they are assured of deriving maximum benefit from such a change. Farmers can be convinced only through influence, demonstration and friendly persuasion. Hence, the importance of farmer education.

As for example, our aim in padi double-cropping is the maximization of production and profits, the adoption of high-yielding varieties by farmers, together with new management practices, modern farm machines, utilization of chemical fertilizers, insecticides and herbicides become imperative. The change from traditional methods which farmers have been used to over many decades to one of technological innovation and adoption is a formidable task and constitutes a challenge to the Extension Service.

It is for this reason that extension workers must not only possess technological and extension skills but they must also have working knowledge of the traditional beliefs, values and attitudes of the community they deal with.

(c) Inadequate Credit Facilities :

Malaysian farming is in a transitional stage, moving from marginal subsistence to a more commercialized farming. With the change from a subsistence to a market economy, our farmers need to be exposed to greater technical innovation and modernization in order to maximize profits, particularly in a situation where labour cost is high as in the Muda Irrigation Project Area. However, given the necessary technology, farmers will be able to produce more for lack of production credit. As Mosher [6] has very rightly said, "To produce more, farmers must spend more - on improved seeds, pesticides, fertilizers and implements. Such expenditure must be financed whether out of savings or by borrowing for the period between the date when supplies and equipment must be purchased and the time when the harvest can be sold".

In order to promote change in agricultural technology, the provision of production credit at equitable terms, as well as proper marketing systems with price incentives, adequate transportation and warehousing facilities become essential. The problems of production credit and proper marketing are not simple as they appear superficially. In terms of credit, the creation of a Credit Authority (the Agricultural Bank) alone will not solve the problem. The problem is not just the provision of credit alone, even at equitable terms, but more important the effective and productive use of loans to ensure their collectibility. To this end, the question of supervision, technical guidance and organization in credit management is a crucial consideration.

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[6] Mosher, A. T., "Getting Agriculture Moving" (1966).

Worthy of note is the fact that the problems related to promoting better agriculture as mentioned above are not only technological but above all human. Therefore, in our efforts to "get agriculture moving" it takes more than just convincing rural people about the goodness or benefits of new ideas and practices; supporting services and facilities have to be provided so that adoption of new practices can become technically effective, economically profitable and socially beneficial.

In Malaysia some breakthrough has been made in tackling these problems. What is important is the need to tackle and alleviate these problems collectively and not in a piece-meal approach, in order to be more effective.

Hence, the current and future emphasis in Malaysia's agricultural extension is the Integrated Approach (or "Area Development") in which all aspects of development of any particular area or community are taken into consideration and embodied into a balanced programme. The programme embraces the development of farm, the home as well as infrastructure facilities. The socio-economic needs of people are reflected in the programme. Providing the integrated institutional framework for Area Development are the farmers' associations of which seventy are now in operation.

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COUNTRY STATEMENT

PHILIPPINES

NEEDS AND PROBLEMS OF AGRICULTURE WITH PARTICULAR ATTENTION TO HIGH-LEVEL MANPOWER, RESEARCH AND PUBLIC SERVICE REQUIREMENTS

Present Situation of the Philippine Economy

The performance of the economy during the period of FY 1967 to FY 1970 has been impressive but has generated serious imbalances in the country's external position. The short-run setbacks in export earnings, triggered off by successive years of unfavorable weather conditions and the large increase in imports to sustain the rapid rate of development have resulted in the depletion of the country's international reserves. This was compounded by heavy reliance on short-term foreign borrowings to finance the expanding trade gap.

At the start, the authorities decided to cope with the payment problem by controlling allocation of foreign exchange through a budget. By early 1970, however, the country was forced to adopt currency revaluation through a floating exchange rate scheme. This was accompanied by the adoption of a retention scheme of foreign exchange from specific export products which was later replaced by a stabilization tax on major traditional exports.

The year 1970 was a period of transition. A number of major developments characterized the stabilizing adjustment which resulted in a noticeable rising of prices of prime commodities by the middle part of 1970. The main thrust of economic policies, nevertheless, contributed to the gradual stabilization of prices beginning in late 1970.

The domestic pressures of 1970 was further aggravated by the realignment of currencies of the Group of 10 nations. As a result of U.S. dollar devaluation, currencies of the other leading industrialized countries had to be revalued upwards which would make Philippine importations from them costlier. But the Philippine economy displayed a remarkable performance as it went through a period of adjustment during calendar year 1971. The growth of the economy in terms of total goods and services in 1971 was 6.5 percent compared to the 5.0 percent achieved in 1970, based on 1967 prices.

During the period from 1970 to 1971, in real terms, personal consumption expenditure increased by 4.4 percent; government current expenditure, 14.1 percent; gross domestic capital formation, 8.7 percent; exports of goods and services, 10.2 percent; and imports which increased by 9.2 percent.

Philippine Agriculture: An Overview

The agricultural sector remains to be the dominant sector in the Philippine economy. It accounts for about 33 percent of the Net Domestic Product. In Calendar Year 1971, the value added in this largest sector was estimated at ₱9,218 million which is about 5.0 percent above its 1970 level. The growth rate registered in 1970 was about 3.1 percent, from the value-added level of ₱8,513 million in 1969.

Agricultural crops which were adversely affected by natural calamities, tungro and other diseases, and the peace and order situation in some parts of the country still managed to expand although at a reduced rate from 6.9 percent in 1970 to 5.9 percent in 1971. For the same period, the growth rate of the combined value added in livestock and poultry grew by 2.8 percent and 4.4 percent respectively.

Rough estimates indicate that about 70 percent of the country's population depend on agriculture for their livelihood and about 55 percent of the employed labor force comes from this sector. All except one of the country's top major exports for many years are basically agricultural products and roughly 85 percent of the total foreign exchange earnings from exports were of agricultural origin.

The trend of agricultural production in the Philippines has been keeping pace with population growth. The index of physical food crop production has been growing at an average annual rate of about 3.5 percent during the last two decades, while population growth is expanding at an average of a little above 3 percent.

The magnitude of the agricultural task in the economy of the country for the next immediate years will be substantial. The factors that will contribute largely to the increased demand for farm output are: (1) the high rate of 3.1 percent rate of population growth, (2) the expected 3.8 percent growth in per capita income, (3) the relatively constant high elasticity of demand for agricultural products, (4) the anticipated 10 percent growth rate per year of exports, and (5) the rapidly developing industries in the various parts of the country that will utilize agricultural products as inputs in their production process.

A number of things may bring about the changes in agricultural production through time. Output may change as a result of either (a) changes in farm inputs employed, (b) changes in technology or (c) a combination of changes in farm inputs and changes in technology. From 1948 to 1960, about 90 percent of changes in agricultural output in the country was explained by changes in total conventional inputs employed such as land, labor and capital. Land and labor accounted for about 65 percent of total agricultural output growth.

Land resource in the Philippines is highly limited and capital available for investment is scarce and has many alternative uses in agriculture as well as in non-agricultural activities. This apparent situation puts agriculture to the acid test of increasing agricultural production through increased productivity.

By late 1965, efforts toward a possible technological breakthrough in rice production was intensified. The program consisted of: development and propagation of the new HYVs, increased credit for production inputs required by the new improved inputs-responsive varieties, expanded irrigation facilities; massive extension services and an accompanying incentive measure in terms of a price support program for the rice output of the farmers.

As a result, from a near constant 3.2 million hectares of riceland, rice production rose from 90.7 million sacks (44 kgs.) in 1965 to 121.4 million sacks in 1971 or an average yield growth from 28.4 sacks to 39.0 sacks, respectively.

The unprecedented success in rice production in recent years brought about mainly by improved technological changes is now being generalized into other development programs including further expansion of rice and corn production, meat production, feed grains, vegetables and fish production.

The Four-Year Agricultural Development Plan

The Philippine government is fully committed to support agricultural development. The four-year (FY 1972-75) agricultural development plan addresses itself to the attainment of the following general objectives and activities:

1. Expansion of food production — an all-out drive to increase production in rice and corn, livestock and poultry, in the corollary production of feed grains, in fish and in selected fruits and vegetables;
2. Expansion of agricultural exports — intensified effort to remove the bottlenecks to expansion of traditional commercial crop production, to develop export markets for non-traditional exports and to promote industrial exports which have a heavy agricultural base;
3. Intensified land distribution — massive effort to facilitate land ownerships as an incentive for increased agricultural productivity and as a means of distributing wealth to a greater segment of the society; and
4. Conservation of Natural Resources — optimize the utilization of natural resources in order to maximize

returns of domestic capital formation and at the same time, maintain the required ecological balance of nature for future generation.

The program strategy to achieve these objectives depends partly in the improvement of agricultural productivity by means of providing the required minimum infrastructure essential in the production and marketing of farm products, capitalizing on the new receptiveness of the farmers to change, continuous development and adoption of new technology and a systematic approach to program planning and implementation with primary dependence being placed in private, rather than on public initiative.

In terms of physical output, the planned average annual growth rates in agricultural production during the four-year period are as follows:

	In Percent)
1. Food Crops:	
Palay (First Priority)	6.1
White Corn (First Priority)	5.8
Vegetable (Second Priority)	6.5
Fruits (Second Priority)	6.6
2. Feed Grain:	
Yellow corn	8.2
Sorghum	70.0
Soybean	100.0
3. Fish	5.8

4. Livestock and Poultry Products: (In Percent)

Poultry	8.2
Pork	8.0
Carabeef	6.9
Beef	6.0
Eggs	7.3

5. Commercial Crops:

Coconut, copra	4.5
Coconut, oil	15.0
Coconut, desiccated and others	15.0
Centrifugal sugar	3.8
Abaca, raw fibers	2.7
Abaca, cordage	3.1
Tobacco, cigar leaf	9.7

6. Forestry (logs)	2.0

Major Needs and Problems of Improving Agricultural Productivity

The formulation of the following needs and problems of Philippine agricultural development was based on previous years of actual implementation of agricultural programs. These are selected problems which have direct relevance to emphasizing high-level manpower, research and extension service requirements.

A. Establishment of minimum level of infrastructure

There is a need for adequate irrigation and drainage systems, feeder roads, ports and market centers. The non-seasonal HYVs perform best in irrigated land with proper drainage systems. The use of certified seeds, fertilizers and other improved technical inputs generated very poor returns as observed in certain areas, for example in Central Luzon where there has been a long drought period or where heavy rains occurred. Feeder roads and market centers have to be developed to bring in better prices for farm products particularly in areas in Mindanao where farmers in isolated areas have no outlet for their products.

B. Modification and Improvement of Social and Economic Institution

The de-facto devaluation brought about by the floating rate of the Philippine peso resulted in a severe credit squeeze that resulted in the inability of farmers to avail themselves of the necessary inputs essential in the application of technological innovation that will improve their productive capabilities. Some existing banking laws which restrict granting of loans to farmers without collateral and with a minimum of red tape have to be effected. There is a need for more commercial banks in the rural areas which will be responsive to the developmental needs of agriculture. As observed in various parts of the agricultural region, the present system of implementing the land reform program have to be modified and improved to achieve the twin objectives of providing land ownership to landless tenants, and at the same time, increasing agricultural productivity in land reform areas. Cooperative institutions have to be strengthened for the farmers to have more bargaining power, and to be able to provide for themselves the benefits accruing to association members. Lastly, there is a need to reform functions and activities of existing institutions affecting the pricing of products and inputs of agriculture. This is particularly so in the case of the price support for rice and the distribution of rice throughout the country.

C. Concentration of resources on few undertakings and integration of common efforts.

It has been observed that the present system of dispersing men and government money over too many undertakings produces ineffective results. It is in this context that the current rice crisis may also be explained by the fact that the government started to re-orient its former all-drive efforts solely for increased rice production to other agricultural enterprises in recent years, after initially achieving some significance in rice productivity. There is a need to concentrate available resources in only few vital undertakings. Government resources including personnel and budget should be redeployed from the current thinly spread utilization to higher-priority programs. At the same time, there is a need to guide or influence the private sector to direct the resources in areas of greatest production potentials.

D. Strengthening of the agricultural education, research and extension programs

At present there are four major groups of organization engaged in agricultural research in the Philippines. These are, namely, the Department of Agriculture and Natural Resources (DANR), the National Science Development Board (NSDB), Agricultural colleges and universities and the private sector. These institutions roughly spent about a total of ₱41 million ($7.0 million) of public funds each year for agricultural research activities. It is surprising to note here that research undertaken for the last 15 years have not contributed any substantial impact on the agricultural economy. A number of factors has been associated with this critical problem, some of which are revealed in a recent study of the Philippine agricultural research system which are as follows:

(1) Current research efforts of agencies doing agricultural research do not usually jib with the national goals laid down in the current national agricultural development program. There is strong concentration in rice, sugar, tobacco and wood utilization. The national program on the other hand emphasizes an agri-business research approach in feedgrains, livestock, fisheries, forestry, export crops and the "second generation" problems of the cereal industry. Little is done to develop production management packages of technology, post-harvest physiology, handling, processing and marketing of priority commodities.

In general, research studies are being undertaken for the sake of gaining new knowledge instead of channeling resources to support specific, high priority research at profitable levels

There is the problem of a tungro disease affecting a significant portion of rice fields in Central Luzon. New varieties of rice resistant to this disease have to be continuously developed. It is only recently that efforts in this line are being undertaken at IRRI, the Bureau of Plant Industry and the U.P. College of Agriculture.

(2) There is insufficient mechanism for planning and execution of research projects on a national scale. Likewise, coordination of research activities among agencies doing similar and complimentary function is difficult to do because these agencies are attached to different organizations.

(3) Most public research agencies give low priorities to research undertakings. Most often, funds for research are diverted to other purposes such as development activities or action programs for which the agency is responsible and hence, under-funded. Some research institution tend to use a major portion of their research budgets for capital outlay to finance construction work, while others allot it to salaries of personnel leaving only a small amount for equipment,supplies and other research operational expansion.

(4) There is a severely inadequate mechanism for disseminating research results to researchers and other end-users. Research results are usually disseminated only through seminars, workshops, scientific conferences and some technical journals and bulletins.

To bring real problems of agriculture closer to the understanding of research workers and the research results closer to the farmers, agricultural extension services should likewise be improved and intensified. For example, at present the extension services at the national and local level is the responsibility of the Agricultural Productivity Commission (APC). The APC is an institution independent from other government agencies, colleges and universities where agricultural research is pursued extensively. In most cases, research results of some agencies are not available to APC. In like manner, problems of farmers are not being channelled to those concerned by APC due to lack of direct coordination. This is also true for many agencies which have included extension as part of their function. This means that extension service would have to be well-coordinated with the activities of agricultural experiment stations. This also implies that to enlarge the absorptive process of utilizing research results, farmers would have to be provided with adequate and effective extension services.

At this juncture, it should be stressed that APC lacks personnel with training in specific areas. In the implementation of the livestock and poultry expanded program, the required extension technicians far exceed the actual available resources. Extension workers are needed in the area of teaching farmers the use of artificial insemination methods, in the livestock dispersal program and in livestock farm management. The need for extension workers trained in various aspects of fish production and marketing also exists. Extension service is likewise needed in the implementation of the production and marketing programs for corn, sorghum, soybeans, coconut and other agricultural crops.

A substantial number of scientists and qualified workers will be required in the expansion of agricultural research and extension activities. The technical training of research personnel is markedly insufficient. Only 47 percent of the time of 1,875 professional workers engaged in agricultural research is devoted to actual research work. Of this total, only 7 percent is contributed by professional workers with Ph.D.s; 12 percent by M.S. degree holder; and 81 percent by workers with training below the M.S. level. Correspondingly, professional research workers with graduate degrees are found mostly in universities and colleges while majority of the less trained workers are found in government research institutions where bulk of agricultural research studies are being undertaken. There is also the imbalance in expertise according to areas of specialization. A sizable portion is found in the area of crop science leaving wide manpower gaps in the areas of fisheries, forestry, foods and nutrition and agricultural economics.

There is an over-concentration of specialists in genetics and very inadequate capability in agricultural marketing and post-harvest handling and processing of plant and animal products.

Educational institutions must provide the technical knowledge and skills that would be essential to supply this demand. At the same time, educational institutions for high-level manpower training should be responsive to what is needed in the actual area of teaching, research and extension services. Teaching institutions and extension services should also provide training of manpower and education of young people who are directly involved in actual agricultural production.

If the educational service is to be made effective, it will require that educational curricula have to be revised continuously on the basis of actual needs of the growing economy. At present, reforms toward this direction in the educational system including high-level manpower training institution in the Philippines will be implemented. In agricultural development this would imply the need for educational activities to be closely associated with activities in research and public service institutions.

Education-Research-Extension Nexus: Concluding Statement

Accelerating agricultural development hinges largely on how fast agricultural productivity can be achieved. Increased agricultural productivity connotes improvement of the production possibilities via technological development. Like most of the developing countries in the region, the improvement of the production possibilities in the Philippines will involve expanded activities in research undertakings, educational systems and extension services required in the national agricultural development plans and programs. These activities are inextricably intertwined; they fully complement each other in the process of evolving technology which is essential in solving the productivity problem. This simple development principle should influence any attempt to coordinate responsibilities of effecting a regional scheme to provide the needed high-level manpower, research and public services requirement of country in the region.

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COUNTRY STATEMENT

THAILAND

THE NEEDS AND PROBLEMS OF AGRICULTURE IN THAILAND

(With particular attention to high-level manpower, research and public service requirements)

Future economic development of Thailand is vitally dependent on the modernization of its agriculture, to convert the traditional subsistence farming to modern commercial farming in order that agricultural productivity and earnings can be raised to sustain the economic growth requirement of the country. The need for agriculture development is made even more urgent in view of increasing population, decline in prices of primary agricultural commodities in the current world market, and the slow rate of development achieved thus far at the farm level.

As the increase in agricultural productivity by area expansion is fast approaching its limit of economic advantage, technical improvement of agricultural practices will have the crucial role in the future social and economic development of the country, which has seventy percent of its population earning their living from agriculture. It is encouraging to learn from experience that even the traditional farmers are generally receptive to technical innovations that are practical and economically sound; for example, they will quite readily accept new crop varieties which are in market demand, or resistant to pests and diseases known to them. It is also becoming more and more common for the government agencies to be approached by enterprising farmers for solutions to their farming problems.

The initial stages of development from traditional practices could be achieved from simple basic technical improvement, but the subsequent stages appear to be increasingly complicated requiring highly trained specialists, oftentimes in many different fields to tackle the problems together. The tungro disease of rice which caused devastating damage to rice crops in Thailand for several years could be cited as an example. The disease could be checked, probably only for the time being, as a result of a crash research program involving highly trained research specialists in entomology, virology, and plant breeding. Several other problems still remain unsolved because of shortage or unavailability of high-level specialists, but not because they are not economically important. It is commonly said and widely accepted in principle that diversification is a key to modern agriculture, but in actual practice the progress in this approach has been disturbingly slow mainly because several technical problems have yet to be solved before the farmers can adopt the practice on any extensive scale. It is apparent that even for a developing agricultural country like Thailand, research is now a necessity for development and not for luxury or prestige, and there is an urgent need for more high-level manpower in many diversified fields of specialization to effectively conduct research to solve many pressing problems facing its agricultural development. The need could even be critical considering the fact that high-level manpower training is in itself a time consuming process and has limited resources in the country.

It would be an unnecessary repetition to go into the details of specific needs for Thailand in respect to high-level manpower, research and public service requirement, inasmuch as such details were already identified and described in the SEARCA case study on Thailand. In its place, it is only appropriate to express our sincere appreciation for such valuable and timely action of SEARCA on this very crucial problem. It is also our hope that SEARCA will continue with its active role toward filling the gap of high-level manpower shortage and strengthening of research activities in its member countries.

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COUNTRY STATEMENT

REPUBLIC OF VIETNAM

Mr. Chairman, Members of the Agricultural Governing Board, Distinguished Guests, Ladies and Gentlemen:

I am very honored to be present at this important live-in seminar, and on this occasion, I would like to convey to you the warmest congratulations from our government.

It is a great pleasure and a real privilege for me to have this opportunity to give you a brief account on the present agricultural situation in the Republic of Vietnam, a country in which over 60% of the population is still engaged partly or fully in farming activities.

All through the First Development Decade, because of the subversive and aggressive war fomented by communist North Vietnam, our agricultural production had been adversely affected. A traditional exporter of agricultural products, the Republic of Vietnam had to import vast quantities of rice, frozen pork and poultry, canned meat and fish, and animal feeds in the past several years. Beginning 1970, with the security situation steadily improved, there was enough evidence to believe that our war-torn agriculture could be rebuilt. And in March 1971, our government launched the First Five-Year Rural Economic Development Plan.

In a nutshell, this Plan aims at increasing agricultural production: first, to meet the domestic requirements for basic foods; secondly, to improve the balance of trade through export of those agricultural, fisheries and forestry products demanded on the world market; and thirdly, to raise the standard of living of our rural population long suffering from war devastation.

To achieve these stated goals our development policy calls for the diversification, intensification, and modernization of our agriculture as advocated by FAO.

To support this Plan, in March 1970, the Republic of Vietnam launched an ambitious land reform program in which roughly 1,000,000 hectares of rice and secondary crop land or 45% of our cultivated land will be distributed to some 800,000 farm families, thus, beneficially affecting the livelihood of 1/2 of our rural population.

In a few words, the "Land-to-the Tiller" Law which is the most important social legislation ever passed by the Republic of Vietnam provides for:

- the transfer of land ownership directly to the present farmers (this is to be completed in three years, from late 1970 to early 1973);
- the distribution of lands free of charge to eligible persons;

the fair compensation to expropriated landowners (20% in cash, the remainder in bonds in 8 annual installments with 10% annual interest) for expropriated lands.

While the undertakings we proposed have not been easy and many problems have been faced, noteworthy progress has been achieved.

After almost two years of implementation, 578,000 hectares of land have been distributed, 383,000 land titles have been issued and more than 28,000 landowners have been compensated.

When fully carried out in early 1973 the Land-to-the Tiller Program will virtually abolish land tenancy in Vietnam.

In the field of agricultural development, rice production is back to self-sufficiency level at 6,300,000 T, pork and poultry production is substituting for frozen meat import, and with an almost 600,000 MT catch last year, fishery products reach export level, to name a few.

The many problems we have been facing are those experienced by most developing countries. But the particular political uncertainty we are in makes them all the more acute.

Of interest to this Seminar, I would like to mention a few outstanding ones:

First and foremost is the severe shortage of trained personnel in all fields and at all levels. This is, of course, due to the fact that almost 70% of our national budget is channelled toward national defense, so not much is left for education. Furthermore, thousands of our agricultural technicians have been drafted in the army. The Five-Year additional agricultural technician requirement is more than 1,700 of which more than 300 are of college undergraduate and graduate levels. At the present, less than 50 persons holding high degrees (MS & PhD) are available for research works and other key positions. Experts in animal husbandry, agricultural extension, agronomy, fisheries, forestry, agricultural engineering, veterinary medicine and irrigation are sorely needed.

Another problem of major concern is the lack of adequate adaptive research. Our agriculture is in urgent need of immediate adaptive research that will open the way to improve farming methods, adaptation and adoption of new and improved plant varieties and animal breeds, identification and control of pests and diseases, better processing and marketing systems.

Some adaptive research is now being conducted in many areas:

- In the field of agronomy to collect basic data of improved seeds of such priority crops as high-yielding varieties of rice, corn, sorghum, soybean, peanut, sugar cane, tea, coffee, banana and pineapple with a view to increase the yield, the quality and disease resistance, to study the appropriate kind of fertilizers, the necessary quantity, the time and method of fertilizer application, to find out the most appropriate farming techniques (density of seeds being sown, time of planting and harvesting ...), to reduce cultivation costs through the correct use of appropriate kinds of herbicides and finally to practice multiple cropping and rotational cultivation.

- In the field of forestry to rehabilitate our forests seriously devastated by war and damaged by irrational exploitation through such works as forest survey, introduction of foreign varieties of fast-growing industrial trees, establishment of artificial forests ...

- In the field of animal production, to develop large scale beef cattle production in the vast grazing areas in the high lands.

Another problem causing considerable difficulties is the inadequacy of our extension efforts. This is due to the unavailability of locally trained extension specialists and partly due to the fact that most if not all extension efforts are made by government employees with very little participation from farmers associations or cooperatives. At the present time, only 200 cadres and roughly 40 college graduates, many of them received short training in extension abroad, are serving over 5 million farmers.

From this discussion, it is evident that Vietnam could greatly benefit from the following forms of regional cooperation:

- high-level technical manpower training,
- joint research venture,
- technical assistance,
- workshop and seminar organization.

High in our priority are the following activities that we propose to do:

1. To improve economic and social conditions which are slowing down agricultural development:

    a. Land reform: the different land reform programs will be vigorously pursued.

    b. Agricultural credit: financial resources needed by our farmers will be augmented with particular attention being focused on mobilizing private capital through our rural banking system.

    c. Marketing system: organization of markets, storage, transportation, and processing of agricultural products through the strengthening of existing farmers' organizations and agricultural cooperatives and the establishing of new ones.

2. To conduct urgent adaptive research in the following areas:
    a. Testing and adaptation of protein-source plant varieties such as peanuts and soybeans
    b. Effects of soil amendment and fertilizer programs on the soils of Vietnam which are low in Ca, Mg, K, P and possibly many of the trace minerals for different crops
    c. Collection and adaptation of fruit and vegetable varieties especially those of high yield, best tasting and shipping quality
    d. Plant and animal pest surveys and controls
    e. Breed selection and feeding trials for livestock and poultry
    f. New marketing systems development

Most of these research activities would require only minor efforts and a short period of time, but could make a very significant and immediate contributions to the country.

3. To strengthen and expand our agricultural extension efforts through:
    a. Training of new extension workers
    b. Upgrading and updating of existing extension workers

c. Completing of the missing link in the two-way extension process (the feedback to research workers of problems of general interests to farmers and of difficulties encountered in the application of research results)

d. Mobilization of greater and greater financial and technical participation of rural institutions in extension works

e. Calling for more rural youth, women, and oldster involvement in agricultural extension

All these endeavors require highly-trained manpower and resources. We could ourselves take care of these problems and needs, but it would take years of hardwork. We strongly believe that with the cooperation of other member countries in the region, these problems could be solved much more efficiently and to the best of mutual interest. With the exchange of gained knowledge through experience, research, and training, with joint and concerted efforts in tackling common or similar problems, we will make the best use of our limited material and human resources for the common cause of economic development of the SEAMEO countries.

If SEARCA can assist and coordinate these undertakings of member countries, it will contribute most significantly to the prosperity and development of the region.

Thank you.

# # #

REGIONALIZATION OF HIGHER EDUCATION IN AGRICULTURE: REALITIES AND PROPOSED APPROACH IN SOUTHEAST ASIA[7]

The magic word being preached now by leading figures in international development around the world is the term regionalization. Papers on the merits of regionalized approach in development programs have appeared in CERES and other distinguished publications of aid agencies. My role in this SEARCA seminar is not to add to the growing list of bibliography on regionalization, but to analyze the merits and feasibility of this approach in higher education in agriculture in the context of realities now prevailing in Southeast Asia, and also to elucidate possible enabling mechanisms to attain desirable ends.

A. What is meant by Regionalization?

Regionalization means, literally, dividing the whole into segments or grouping the countries into logical geographical areas. Thus, regionalization of higher education in agriculture in Southeast Asia implies an approach for the region that may be entirely different from others by virtue of its general character and the conditions prevailing therein.

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[7] Paper prepared by Dr. F. A. Bernardo, UPCA Director of Graduate Studies.

At this juncture, it would be best to make a distinction between the establishment of the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) and the actual regionalization of higher education in agriculture. I would define the latter as "the fostering of intra-regional understanding among administrators, professors and scientists and the promotion of intra-regional cooperative efforts in higher education in agriculture for the mutual benefit of member countries and the progress of Southeast Asia as a whole." On the other hand, I view the establishment of SEARCA as a political decision signifying the go-signal to regionalize graduate training and research in agriculture. SEARCA as an institution is no more than an administrative mechanism to facilitate regionalization. Whether it will succeed in its gigantic task or not depends on the political backing it wins, the administrative leadership it provides and the academic leadership it promotes either at Los Baños or in other centers of excellence in the region.

This personal view implies that SEARCA is a center of excellence, but not necessarily the only center of excellence in graduate training and research in agriculture in Southeast Asia. After all, centers of excellence are not created through joint communiques or memos of understanding. They simply emerge, as UPCA did, and are recognized by virtue of the leadership they provide in education and research. However, the fact that SEARCA is an administrative structure to facilitate regionalization cannot be disputed.

For many years before the historic meetings of SEAMEC which led to its official recognization of Los Baños as a center for graduate training and research, UPCA had already been serving its neighboring countries as de facto center for higher education in agriculture. Many Thai nationals studied at Los Baños before World War II. In the 1940's and 1950's, students from Thailand, Indonesia, Vietnam and other countries went to Los Baños for undergraduate and graduate training. The recent creation of SEARCA has so far increased the number of graduate students coming from Southeast Asian countries, and has led to the initiation of some cooperative programs toward regionalization.

B. Is Regionalization Desirable and Feasible?

Although Southeast Asian countries differ in culture and educational systems, a hundred and one similarities justify their grouping into one region apart from the rest of Asia. Their economies are predominantly agricultural, with roughly 70% of the population engaged in agriculture and 60% of the foreign exchange earnings derived from exports of agricultural products. Rice is the region's main staple crop and the ubiquitous carabao is the farmer's work animal. The farms are on the average no more than three hectares and a large proportion of cultivated land depends on rainfall. Rain comes in torrents most of the year and often causes floods. On the hills and mountain sides, shifting cultivation is a common nagging problem. Diffusion of new technology in the rural areas is a continuing problem, complicated by high rates of tenancy. A great number of the people are undernourished, birth rates are high, and there is a high rate of unemployment and underemployment. Thus, countries in this region have numerous common problems which warrant a regional approach.

A regional approach in higher education in agriculture offers many advantages:

1. Economical - Graduate training requires highly trained staff and special facilities which many countries do not have and could not afford to have because of the huge investments required. Since there are existing centers of excellence in the region, such as the UP College of Agriculture, which can provide graduate training in agriculture, Southeast Asian countries should send graduate students to these centers rather than commit their limited financial resources to establish their own graduate schools in agriculture. It would also be more

economical to send graduate students to centers within the region than to send them to universities in western countries. Estimates, for instance, show that it costs about $25,000 to produce a Ph.D. in the United States in contrast to $7,000 to produce a Ph.D. at Los Baños.

2. Relevant - Obviously, graduate training within the region has a better chance of achieving relevance than graduate training elsewhere. This is particularly so in many cases where professors maintain a Southeast Asian perspective. Steps to achieve greater relevance will be discussed later under "Proposed approaches and strategies to achieve regionalization".

3. Time-gaining - It would take many years for each country to build up a strong graduate school in agriculture — even if unlimited funds are made available. Staff development, expertise in the agricultural profession and achievement in agricultural research which make for a strong graduate program takes years of hard work. The regional approach makes a graduate school immediately available and serving the interest of any particular country in the region.

4. *Less conducive to brain drain* - The relevance that it hopes to achieve, the fact that students are not familiarized with the culture, habits and practices of the western world, and are not exposed to tempting job opportunities abroad are reasonable bases to believe that a regional approach to higher education in agriculture is less conducive to brain drain.

5. *Accelerating agricultural development* - Cooperative efforts in graduate training and research will undoubtedly have an accelerating effect on agricultural and economic development in the region. Graduate research, which is usually part of graduate education, will generate new and better knowledge in the region; successful experiences in one country will rapidly spread benefits to others, and highly-trained manpower and expertise made available through cooperative efforts will help accelerate progress in agricultural and rural development.

6. *Coordinating regional activities with aid agencies* - Many external aid agencies are working quite independently in different countries. SEARCA, as a facilitating organization, could serve as a channel of

communication and a mechanism to help coordinate their activities as far as agricultural development and manpower training are concerned. Thus, hopefully, the assistance of aid agencies could be more efficiently utilized and the benefits, maximized.

Any attempt to regionalize higher education in agriculture should consider existing realities that are stumbling blocks. Full knowledge of the types and nature of constraints would be helpful in developing strategies to overcome them. Among the realities that pose serious difficulties to achieve regionalization are as follows:

1. Differences in the educational systems of Southeast Asian countries - Almost all countries in the region, with the exception of Thailand, were for some time in history colonized by western powers which determined the educational system adopted by each. Indonesia's educational system was patterned after the Dutch; Malaysia's, after the British; Vietnam's after the French; the Philippines', after the American; and Thailand's is a mix of various systems. The grading systems are also different for each, which make evaluation of student records difficult.

Happily, current plans in Indonesia are underway to revise its system, which hopefully will minimize its differences from those of Thailand and the Philippines.

2. Differences in the medium of instruction used - The different media of instruction used also pose a constraint to academic interchange and regionalization. This problem is bound to be more serious in the future because the use of national languages is being enforced even in the collegiate level in each country's attempt to strive for self-identity and respect.

3. "Ultranationalism" or "Anti-regionalism" - Some nations feel that their educational system and standards of instruction are the best in the region. Responsible government officials and even private individuals tend to look down upon degrees obtained from another country, most especially if obtained outside of U.S., Europe or any highly developed nation. This problem is aggravated by the fact that those responsible for accreditation and civil service rules of each country are often non-academicians and rather ill-informed about the quality and standard of education available in other parts of the region.

4. The social acceptability of M.S. or Ph.D. graduates from unfamiliar, if not unheard of universities - The quality of graduate degrees from universities of developing countries is often doubted if not openly questioned. Each country has its own preconceived notion of quality education associated with the name of the institution of higher learning. If one does not get his graduate degree from the leading national university, he must get it from progressive western nations if he would like to be assured of social prestige. This human bias is understandable even if unreasonable. For how could one be sure of the quality of education in agriculture in a country which is still developing and has not even demonstrated its ability to cope with its own problems of agricultural development? For instance, if graduate training in Los Baños is truly the best in the region, one from Indonesia or Malaysia would naturally expect Philippine agriculture to be most advanced and progressive in the region. It is perhaps difficult for foreigners to understand the Philippine situation. At any rate, this constraint to regionalizing higher education in agriculture in Southeast Asia is a stark reality.

Thus, the regional approach in Southeast Asia is highly desirable, but whether it is feasible or not depends upon the strategy to be adopted to overcome difficult obstacles that lie ahead. Certainly, the situation is challenging for SEARCA and all concerned.

C. Proposed Approaches and Strategies to Achieve Regionalization

1. Development of a multi-campus graduate school - The original concept of establishing SEARCA for the reason that Southeast Asian countries have limited resources and could not afford to establish their own graduate training centers is a logical idea, but to expect that each country will not commit huge investments to have its own is not a realistic idea. Recent developments have shown that institutions of higher learning in agriculture are emerging or developing more rapidly in the region. Kasetsart University in Thailand is now about to sign a contract for a substantial World Bank loan (US$14.5 million) for its development program, with a whooping US$25 million counterpart fund which the recent coup de'tat made possible. Malaysia has definite plans to establish the

Universiti Pertanian Malaysia which will begin operations in June, 1973. Initially, its creation will be based on the amalgamation of the Faculty of Agriculture of the University of Malaysia and the College of Agriculture at Serdang. Indonesia's Institute Pertanian Bogor, in spite of its low faculty salaries, has a yearly capital outlay of about US$0.730 million and is being developed into a strong agricultural university with the assistance of the Midwest Universities Consortium for International Activities (MUCIA). The National Agricultural Center in Saigon has already obtained approval of its development plan and has the necessary budget for the establishment of a new and larger university campus outside the city limits.

Some of these institutions have already developed certain strength in graduate studies. It is just a matter of time for them to build up more strength than ever before.

With this perspective, regionalization of higher education in agriculture should consist of, among other things, the recognition and exploitation of certain peaks of excellence in these national universities so that they too may serve the region. For instance, Kasetsart University appears to excel in Horticulture. Anyone in the region may, therefore, be encouraged to go to KU for an M.S. in horticulture under the program of SEARCA. Under this concept, SEARCA could grow to be a multi-campus graduate school without encouraging unnecessary duplication of peaks of excellence.

I shall return to this important approach after having covered other strategies.

2. Accreditation and recognition of key agricultural colleges and universities in the region - Any scheme to regionalize higher education in agriculture should not ignore the fact that there is more than one agricultural college in each country. In truth, there are too many agricultural colleges in some countries at various stages of development. Many of these colleges may not be able to contribute to the strengthening of graduate education in agriculture, but since some of these will likely play key roles in national manpower development steps must be taken to ensure that they receive the benefits of quality graduate education in

the region. Key agricultural colleges in each country should be identified so that they may be considered favorably in the allocation of SEARCA graduate scholarships.

Accreditation of agricultural colleges should also be done immediately. If exchange of graduate students among Southeast Asian countries is to be encouraged, exchanges should take place among accredited institutions only. We hear too often that students from other countries go to the Philippines for graduate work in agriculture, but they choose to go to weak colleges. It is conceivable that when they return to their respective countries, their performance could considerably damage the reputation of graduate education in the Philippines. Cases such as this would impede rather than promote regionalization.

3. Provision for mechanisms to overcome graduate school admission difficulties due to differences in the applicant's educational backgrounds - While it is desirable to evolve a common educational system to facilitate exchange of students, it is wishful thinking to believe that such a dream could come true within the near

future. What then should be done to overcome admission difficulties due to differences in educational systems? Such difficulties could be resolved without relaxing academic standards by requiring a qualifying examination to determine possible academic weaknesses in the preparation of the applicants. The test results would serve as a basis for prescribing course work to make up for any real deficiencies. In the case of some countries which are yet in the process of developing strong undergraduate programs, SEARCA scholarship grants should provide support for pre-graduate school training.

4. Provisions for graduate research work in one's home country or institution - SEARCA has actually made it possible for some of its graduate students to return to their home countries for thesis research after completing their course work at Los Baños. Such practice increases the relevance of graduate studies and makes it possible for the student to set up the nucleus of his future research program in his home institution. Whenever possible, this feature of graduate work should be made a part of graduate education in Southeast Asia.

5. Field experience and training in non-degree granting institutions - Certain research institutes and experiment stations in Southeast Asia are noted for their experienced staff and outstanding research programs. Among these are the Rubber Research Institute and the Institute of Food Technology in Malaysia, the Rockefeller-supported Corn and Sorghum Experiment Station at Pachong, Thailand and the International Rice Research Institute, Dairy Training and Research Institute and Agricultural Credit and Cooperatives Institute at Los Baños. These leading institutions should be made to play a more important role in regionalizing graduate training by utilizing their staff in graduate teaching whenever possible and sending graduate students to these centers for field experience and research work.

6. Mobile teams to offer special short courses

Dean D. L. Umali's idea of creating mobile teams of experts which could offer special short courses in key agricultural colleges in Southeast Asia is a worthwhile innovative approach. Such approach, however, should be carefully planned to fill actual needs of the different countries in manpower training. This implies that a survey of the need for this type of service must first be undertaken.

7. Careful consideration of national development plans and regional economic plans, if any, in high-level manpower training - Regionalization of higher education in agriculture would be a meaningless exercise unless it is geared to supply the urgent need for high-level manpower in each country. In the face of limited resources for regional cooperative work, national economic plans must be carefully considered and priority areas for manpower training should be identified and given preferential attention. A recent significant development is the joint regional economic planning by the Association of Southeast Asian Nations (ASEANS). Any forward looking scheme to regionalize graduate training and research must complement and possibly dovetail with the economic blueprint of this organization.

D. Setting Up the Mechanism for the Establishment and Operation of a Multi-Campus Graduate School

The establishment of a multi-campus graduate school in agriculture for Southeast Asia, somewhat like a consortium, is perhaps the approach to regionalize higher education that deserves more attention now. I personally consider it most important because it is an institutional approach that will hopefully be far-reaching, fruitful and truly regional in scope and character. It will put to use existing academic strengths or peaks of academic excellence in the region and will involve distinguished and outstanding professors in various fields. Most important of all, it is a means to facilitate academic interchange.

The following conditions and guidelines are proposed for the establishment and operation of the Graduate School of Agriculture for Southeast Asia (GRADSASEA).

1. The regional graduate school shall be operated in the same way that most graduate schools of large universities are administered. It shall rely mainly on the existing facilities and staff resources of leading colleges in the region.
2. Any strong department, division or field of study in any of the leading national colleges of agriculture shall be recognized on paper as a part of the regional graduate school. Thus, it is possible that the Department of Horticulture at Kasetsart University will be the Department of Horticulture of the regional graduate school with the

UPCA and IPB departments of horticulture providing assistance in terms of supplementary courses and staff support. In this case, the SEARCA student shall be conferred the M.S. degree from K.U.

3. This approach implies that areas of strength in graduate work in each national agriculture college or university shall be identified and a close cooperative working relationship among their professors shall be maintained. The most convenient mechanism to attain this end is the creation of academic coordinating committees consisting of one representative for each academic area from each member country. Academic Coordinating Committee shall be created for each of the priority areas in the region, such as follows:

1. Agronomy and Soils
2. Horticulture
3. Plant Breeding and Genetics
4. Animal Husbandry
5. Dairy Science and Technology
6. Poultry Science
7. Food Processing
8. Plant Pathology

   9. Entomology
   10. Agricultural Economics
   11. Agricultural Education
   12. Agricultural Extension
   13. Agricultural Communication
   14. Rural Sociology
   15. Agricultural Engineering

4. Initially, the academic coordinating committees shall serve as study committees to get acquainted with the available faculty and facilities and the graduate programs in each institution represented. Each committee shall resolve objectively as to which among the units represented is the best in the field of specialization and, therefore, deserves recommendation to be officially the department of the regional graduate school. Going through this whole exercise alone should be helpful in closing the information gap now existing among the administrators and professors in each field of regional graduate work.

5. The academic coordinating committee shall also tackle other problems such as core courses required for each field, admissions, foreign requirements,

improvement of teaching materials, use of Southeast Asian data, exchange of information, periodic evaluation, etc.

6. The tenure of membership to the committee should not exceed two years to provide other senior professors in the field an opportunity to get acquainted with each other and the academic program of the regional graduate school. Thus, each important professor shall have an opportunity to participate.

7. Since the academic coordinating committees will likely need administrative support and guidance, the regional graduate school shall have an Advisory Council consisting of the SEARCA Project Leader and the deans of the different graduate school of agriculture in the region.

8. Under this new approach, SEARCA does not have to hire its own academic staff, but shall continue to serve as a coordinating and facilitating agency. It could help each department or field of study by way of providing funds for graduate research, workshops and seminars, publication of manuals, syllabi or books, short-term consultantship, and honoraria for graduate teaching.

The attached functional chart is proposed as a scheme for this approach to regionalize higher education. (Please turn to page 220.)

This approach to regionalization of higher education in agriculture will entail considerable expenses to support the operations of the academic coordinating committees, but such expense is worth incurring. The committees will provide a mechanism for the academicians to get together and be acquainted with the strengths and weaknesses of each institutions' graduate program, and to exchange views and work together. Each one shall be better informed and may be counted upon to help in the promotion of cooperative efforts.

Considering fund limitations, a few academic coordinating committees for priority areas may be created initially.

In closing, I wish to stress the fact that regionalization of higher education is something that cannot be achieved by SEARCA alone. Any attempt of SEARCA to regionalize graduate education, even with the full-hearted assistance of highly placed administrators in each Ministry of Education or university in Southeast Asia can at best be half-successful. For cooperation among academicians cannot be forced against their will, especially if they do not have respect for each others' academic competence. Regionalization can be facilitated only by professors who stand out in their respective fields – professors who gain the respect of their colleagues in the region and draw regional students to their classrooms and laboratories and professors who can provide academic leadership within the region.

It is for this reason that such professors should be sought out, rewarded and encouraged. SEARCA's new proposal toward this end is, therefore, most heartening.

# # #

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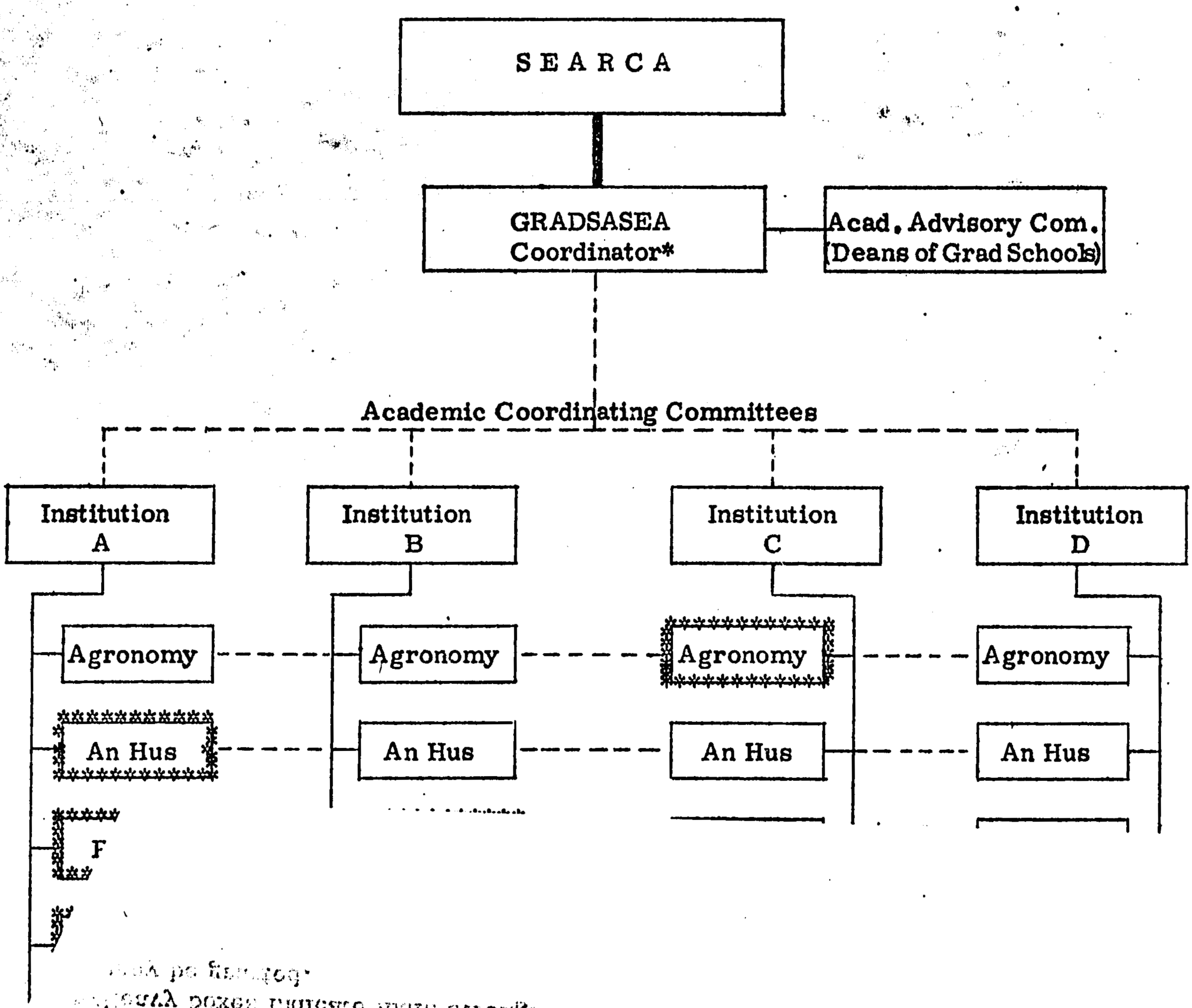
FUNCTIONAL CHART

GRADUATE SCHOOL FOR AGRICULTURE IN SOUTHEAST ASIA



REGIONALIZATION OF HIGHER EDUCATION IN AGRICULTURE: REALITIES AND PROPOSED APPROACH FOR SOUTHEAST ASIA[8]

Copies of my first paper which were distributed to you yesterday and which I presume you read last night, dwelt on the advantages and difficulties of regionalizing higher education in agriculture in Southeast Asia and the possible approaches and strategies SEARCA might adopt to attain its objectives. I discussed seven approaches to regionalize higher education, particularly at the graduate level.

This addendum is an attempt to elaborate further on the advantages of creating a single multi-campus graduate school in agriculture in Southeast Asia and to expound further on the mechanism to achieve regionalization of graduate studies.

The establishment of a single multi-campus graduate school following the mechanism which I proposed has many advantages. Among those are the following:

1. It will lead to the involvement of the professors themselves on whose shoulders depend regionalization of the course content.

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[8] Addendum to the paper prepared by Dr. F. A. Bernardo, UPCA Director of Graduate Studies.

The creation of Academic Coordinating Committees consisting of one professor for each field of specialization from each graduate school in the region is actually a means to involve professors in the problem of regionalizing the graduate program for the specific fields. They would interact with one another, visit each other's institution, exchange information and data and be acquainted with the varying problems obtaining in each academic area. Most important of all, they will get to know each other, and thus pave the way to continued intra-regional communication. Limiting the tenure of membership in the committee to a maximum of two years will provide the mechanism for each professor to take turns. These academic linkages will hopefully increase awareness of developments in each country and lead to the regionalization of course content and teaching methods.

2. It is an unorthodox way of licking the problem of accreditation.

Each Academic Coordinating Committee will gather information on the facilities, staff resources, course offerings, instructional materials such as syllabi and manuals, and list of references used in a particular field of graduate work in each graduate school. While the intention is not actually to undertake a study on accreditation in the sense that there will be an official declaration as to which courses are creditable and which are not, important information shall be made available to professors in a particular field such as plant breeding. Thus, a professor in plant breeding in Indonesia who feels that Kasetsart has an outstanding professor and has a good course in plant breeding would encourage his students to go there for that particular course.

Furthermore, I wish to stress that this approach will make possible the individual treatment of academic areas. Even with limited funds, therefore, some progress in high priority academic areas may be accomplished. In this connection, I would recommend the establishment of priorities in academic fields for which Academic Coordinating Committees may be created as SEARCA funds for their operating expenses become available.

3. It will result in the publication of brochures and catalogues of graduate programs in Southeast Asia for the benefit of students.

we can probably count on our fingers the number of Filipinos pursuing graduate work in Kasetsart or the number of Thai students in Indonesia or Malaysia. In contrast, many of them go to Europe, U.S. and elsewhere outside Southeast Asia. The fact that they go out of the region could be due to various reasons, one of which is possibly the lack of information about the availability of strong graduate programs in Southeast Asian countries. The present proposal will solve this problem. The Academic Coordinating Committees' work will lead to the publication of brochures in the different fields and the joint efforts of the Committees should produce a consolidated Graduate Catalogue for the Graduate School of Agriculture in Southeast Asia. Imagine how useful such handy references could be for graduate students and even professors themselves.

4. It will make possible the utilization of pockets of academic excellence outside of UPCA.

The U.P. College of Agriculture was chosen to serve as SEARCA's host institution because of its many strengths in graduate education. However, UPCA cannot claim to have a monopoly of academic excellence.

Surely, there must be some brilliant professors in agricultural colleges outside of the Philippines and there are probably many exciting, stimulating and advanced courses offered in some particular academic disciplines in different institutions. The present proposal will lead to the identification and utilization of the existing expertise and strong graduate programs outside Los Baños.

5. SEARCA will facilitate the creation of a truly regional graduate school in agriculture.

The Graduate School of Agriculture in Southeast Asia (GRADSASEA) will be truly regional in terms of scope and character. It will involve other graduate schools in the region even if they will provide only supportive courses and assistance in facilitating exchange of information and guiding graduate students. Students could take courses in Saigon or Serdang and get credited for them in Bangkok or Los Baños.

At this point, I wish to elaborate on a new approach in the administration of graduate programs to make this type of accreditation possible. In the U.P. College of Agriculture, we used to have a very strong Department of Agricultural Economics, but this department became relatively weak because of staff resignations or involvement in administrative responsibilities. (Dr. Lawas pointed out yesterday the imbalance of staff strength at Los Baños, but he failed to mention that the reason why we have few agricultural economists is the fact that we lost many of them, including Dr. Lawas himself.) Although our Department of Agricultural Economics does not have the capability single-handedly to offer a strong Ph.D. program, we have encouraged the department to admit a Ph.D. student following the interdisciplinary, inter-college and inter-university approach. This means that its Ph.D. student has to take courses at UPCA, at the main University campus in Diliman, and in any other institution or institutions abroad to fulfill at least the minimum course requirement for the Ph.D. degree in our Graduate School. Officially he is registered as a Ph.D. student at Los Baños and therefore has his adviser there.

How did we make this possible? We simply revised our rules to enable a graduate student to get credit for any unlimited number of courses outside U.P., provided that the courses taken were predetermined and approved by his Advisory Committee and the Director of Graduate Studies at Los Baños. Note that the student must have a strong Advisory Committee composed of a competent professor as his adviser and committee chairman and at least two other members representing the major and cognate fields. This Committee must recommend the student's plan of course work for approval by the Director of Graduate Studies before the student could take graduate courses abroad.

At present, UPCA has four Ph.D. students under this arrangement. We feel that through this new approach, we can avail ourselves of the best expertise and courses abroad. Therefore, I strongly recommend the adoption of this new approach in any graduate school in Southeast Asia with the hope that M.S. or Ph.D. students will take courses of distinguished professors in any country in the region and then

> return to his own for thesis work. If we could do this within Southeast Asia, we would be making a big stride forward toward true regionalization of graduate work in agriculture.

I hope that I have elucidated fully every angle of my proposal and have convinced you that regionalization of graduate education is not only desirable but also feasible. If I have not succeeded yet in my attempt to convince you that we really have a realistic and viable approach to regionalization, I would be willing to write a third paper on this topic.

# # #

SUMMARY STATEMENT ON REGIONALIZATION OF HIGHER EDUCATION IN AGRICULTURE IN SOUTHEAST ASIA

Edwin B. Oyer
UPCO Project Leader
UP College of Agriculture

This seminar has had the pleasure of witnessing and sharing in the birth of an idea on the regionalization of higher education in agriculture. The definition bears repeating: "the fostering of intra-regional understanding among administrators, professors and scientists and the promotion of intra-regional cooperative efforts in higher education in agriculture for the mutual benefit of member countries and the progress of Southeast Asia as a whole." This idea, as any other, is subject to one of two fates. It can be accepted or rejected.

While in the writer's opinion there appeared to be general acceptance of the idea, a number of questions were raised, and a number of problems were identified and discussed. If the idea is accepted, its fruition and implementation will require a good measure of understanding, commitment and energy on the part of all participants. The idea deserves serious consideration and analysis before a final decision on its acceptance or rejection is made. Following are a review of facts and opinions presented which bear on the subject, along with some questions which might be considered.

Need: Without exception, country statements identified a need for either more trained personnel or an up-grading of the training of present personnel. While the level of additional training needed was not defined as to graduate or undergraduate, it is apparent that higher education will continue to play a key role in supplying manpower needs for teaching, research and extension functions. Pertinent questions are: Can the present system of higher education in the region supply the numbers and quality of graduates needed to fill the stated manpower requirements to do the expected jobs? Can a regional approach to higher education be expected to provide either more or better graduates than are being produced by the present system?

Conflict of regional vs. national goals: This point was mentioned in both the paper and discussion. There appeared to be general agreement that the products of higher education should be expected and prepared to implement national and regional programs. Since the 'peaks of excellence' already existing in the region have presumably resulted from pursuit of national goals, it would appear that no conflict between national and regional goals should develop.

Problems of standardization: The paper pointed out that the educational system existing in the area reflect those of an associated western country and problems created by differences in credit and degree recognition, medium of instruction and entrance requirement were identified in the discussion. Similar problems have existed and been solved since the first student entered a foreign university, so these problems alone should not be major stumbling blocks if regionalization is a desirable goal. Do not these same problems exist to an even greater extent when a student from Southeast Asia attends a western university?

In conclusion, I would like to re-emphasize one of the positive effects which would result from the implementation of Dr. Bernardo's proposed multi-campus university. That is the benefit of the increased personal contact between professors and students from the several countries of Southeast Asia. One's base of experience and outlook is broadened by travel and contact. Certainly this would be a great asset to the educators and future educators of the region.

# # #

REGIONALIZATION OF AGRICULTURAL AND RELATED RESEARCH[9]

It is a great pleasure for me to share with you my thoughts about the regionalization of agricultural and related research for Southeast Asia.

Agricultural and related research is a phrase common enough to all of us and whose meaning and connotation I am sure everybody appreciates. Preceding agricultural and related research with the word, regionalization, somehow makes the phrase uncommon; in fact, it gives it a "mod" personality, as if to regionalize our research efforts is to answer the need of the present generation.

To my mind, two implications are immediately made clear by the phrase, regionalization of agricultural research.

FIRST, research problems are recognized, and from this effort, a research program is planned and implemented in the region. In recognizing research problems, nations must learn to pinpoint accurately the needs of their agricultural economy. Experts from other countries cannot do this because only the nation's leaders can understand the needs of its people. The contribution of experts from other countries is more meaningful if their national counterparts are familiar with their own needs and interests.

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[9] Paper presented by Dr. Marcos R. Vega, Director of Research, U.P. College of Agriculture, College, Laguna.

In the Philippines, for instance, a social laboratory to study socio-economic problems of the people pools the expertise of a visiting professor and several UPCA staff members in the social sciences who have previously undertaken socio-economic studies.

SECONDLY, there is an implied desire and attempt on the part of the countries in the region to work as a "team" in solving common research problems. If we accept the concept of regionalization as a good thing in itself, we must be prepared to give whatever resources we can contribute to the regional research program. Some nations will provide trained manpower, others will provide facilities and equipment or a bigger share of the funds, and several nations will be able to contribute manpower, equipment and facilities, and funds.

Taken in this context, and as one who has been exposed to the problems of agriculture in some Southeast Asian and other developing countries, I look at regionalization of agricultural research as something welcome. The very attempt to regionalize our research efforts gives the impression of being "forward looking" and magnanimous in attitude.

The concept of regionalization is complex, and in this part of the world, quite recent. To discuss its various ramifications would take us to great lengths, which I am afraid, we have not the time to discuss. But, perhaps, after my presentation and discussion with you later, we can find some areas of agreement on possible answers to two questions I will now raise.

FIRST, "What aspects of the agricultural research needs of Southeast Asia can be done and should be done in only one place in the region because the resulting information and technology are also applicable to the rest of the region?" More specifically, "What problem areas and what types of research should be conducted which will benefit the entire region?"

The advantage of being able to identify the kinds of research areas in terms of savings in research staff time and research funds are too obvious to elaborate on.

SECOND, "What role should an organization established for this purpose, such as the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), have in the regionalization of agricultural research?"

The Situation

There are certain features in the region which we must recognize and, even more important, appreciate while we are in the process of regionalizing agricultural research.

The countries of Southeast Asia are developing nations, and, therefore, we cannot afford to waste resources. The situation dictates upon us a far greater need to apply in any undertaking, research included, the principles of scientific management more rigorously than would be the case in the more developed countries. We need to be more resourceful, more imaginative and ingenious than the people of the wealthier nations.

While our region can lay claim to a vast human population, this population is not necessarily manpower. For manpower is a combination of specific knowledge and skills which are products of education, training and experience that is appropriate to the specific tasks that must be performed.[10] I am in full accord with the view that the training and experience in conceptualizing a problem and organizing an investigation to resolve or learn about it is achieved in the M.S. and Ph.D. study programs.[11] As it is in most countries of the region, only a limited number of agriculturists are trained beyond the B.S. level.

Partly as a result of insufficient manpower, an individual is "forced" to take responsibility or provide leadership over a very wide, and oftentimes divergent areas of research. Let us recognize that even with the support of less trained subordinates, one cannot provide adequate research leadership in such a situation.

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[10] S. K. Roxas. The Selection of High-Yielding and Relevant Research Projects. SAR Induction Ceremonies, March 1971.

[11] A. H. Moseman. Institutions in Agricultural Development. The Iowa State University Press, 1971.

Admittedly, the realities I have discussed concerning the region present the general situation. I must add at this point that there are, nevertheless, within the region pockets of excellence in certain aspects of agricultural research; to name a few, the Rubber Research Institute of Malaysia, the International Rice Research Institute in the Philippines, and the College of Agriculture of the University of the Philippines.

Setting up Research Priorities

There is a multiplicity of agricultural problems in the region. I am sure that each country can come up with a list. I am also sure that the list in each country will be staggering. It seems very logical then that the problem areas be arranged in a priority order.

I am aware that some countries in the region have gone through this exercise. The National Agricultural Research System Survey Technical Panel of the Philippines submitted in December, 1971 a report on *Recommended Research Areas for Agriculture in the Seventies*. In Indonesia, the Joint Agriculture Research Survey Team produced the *Report of Survey and Recommendations on Organizations, Systems, and Requirements for Research in Agricultural and Related Industries*.

In the Philippine effort, the specific projects that need to be conducted in each priority area are listed. Likewise, the agencies that should coordinate efforts in undertaking the projects are identified. The list of problem areas in the coconut industry is appended (Appendix A) as an example.

From the priority lists of countries, problem areas that are common to the region can be identified. I anticipate that the problem areas common to the region may be grouped into two: (a) those that are "location bound" or conditioned by environmental conditions in the country and, therefore, need to be carried out in each country, in fact, even in several locations within a country, and (b) those that may be carried out in only one country and the resulting information and technology be made available to the rest of the region.

The problem areas I am referring to as "location bound" may not be difficult to identify and obtain agreement on among the countries in the region. Prominent among these are adaptive trials concerning varieties; the rate, time and placement of fertilizers; the control of pests, diseases and weeds; and many more.

The latter group of research areas is an aspect in the regionalization of agricultural research which, if fully exploited, will mean a most efficient utilization of our resources. A few examples of this kind of problem areas may be mentioned at this point.

1) The development of particular plant characters that are easily inherited and have great influence on yield is a primary concern.

The dwarf gene was utilized by the Rockefeller Foundation staff in Mexico in the development of short statured wheat plants. From Mexico, the dwarf wheat found its ways to many wheat growing countries for adaptive trials and subsequent commercial production.

The case of the IRRI rice varieties is, I am sure, familiar to all of us. Short statured, nitrogen responsive, resistant to a number of diseases -- the varieties were developed at the Institute in Los Baños, and have subsequently been grown in many of the rice growing areas all over the world.

The incorporation of high lysine in corn varieties adapted to our climate and preferred by our people, and the development of varieties that are resistant to major diseases, particularly downy mildew, should be done in a very limited number of locations.

These are good examples of solidifying resources and efforts in one location and later adapting the production technology as it applies to other countries in the region.

2) The determination of basic nutritional requirements of our economic animals need not be done all over the region. It can and should be done in one place and the information be disseminated to

the rest of the region. I hasten to add, however, that once the basic nutritional requirement is known, each country may want to determine the economic feed sources in the country that could best supply the requirement.

3) In animal breeding, there are some who contend that we in the region need not develop our own breed of swine, for instance. The rationale behind this is that with all the breeds that have been developed and made available, we can set the kind of animal we want, determine which among the available breeds possess high nicking ability, and then launch a cross-breeding scheme to produce the hogs as the market requires.

Others maintain we can and should develop our own breeds and point to the experience of Israel in producing their own Holstein Friesian. Should a decision be made to resolve this issue, the work should be done in only one place.

4) In recent years, there has been a lot of interest on the photosynthetic efficiency of plants. These studies are conducted on plants growing in the field. Aside from purely academic interest, the results have been utilized in the selection of breeding materials. The equipment required for such studies are very costly to acquire and maintain. We should, therefore, not have such setups all over the region.

5) Protein nutrition has and will, for some time, be a major concern in our region because there is not enough protein available to our people at prices they could afford. While efforts are continuously being exerted to make protein from conventional sources economically available, interest has been, and rightly so, generated to discover and develop unconventional sources of protein. It is to our advantage if the search for these environmental sources be centralized in one location in the region.

The Role of SEARCA

We have drawn a workable pattern of regional coöperation. Now, I should like to give my views on the role that a regional organization, such as SEARCA, should play in the regionalization of agricultural research.

FIRST and foremost, SEARCA should continue to train manpower in order to improve the quantity, but more important, the quality of researchers in the region. SEARCA is doing this and should continue to perform this role. There should be very little disagreement as far as this role of SEARCA is concerned.

In developing the manpower requirements of Southeast Asian agricultural research, SEARCA should regularly evaluate the manpower needs for research in the region so that it will be training training people with very definite goals to accomplish.

SECONDLY, I suggest that SEARCA concentrates its resources in the problem areas that should be done in only a few locations in the region. This SEARCA can do by identifying the research areas and the proper researchers, and then make available the necessary resources.

For the "location bound" problem areas, a regional organization like SEARCA should at most serve as a catalyst in the sense that it calls attention to both the problems and the available information within the region. "Location bound" research problems should be the responsibility of national organizations.

Concluding Remarks

Aside from the need to train a sufficient number of high caliber researchers in the region, the question of regionalization seems to be more of a problem of organization, especially in the initial efforts of integrating our resources. In this endeavor, one must realize that the regionalization of agricultural research, and for that matter, the regionalization of higher education and agricultural extension, is not a mechanical process wherein missing links can be readily replaced or substituted with whatever is available. Regionalization involves institutional changes, and as in any changing process, its success greatly depends on our attitude and open mind to accept the requirements of a coöperative research undertaking involving not two or three but all nations in the region. To leave out these factors for reasons of exigency is not facing the problem squarely.

Appendix A — From: *Recommended Research Areas in Philippine Agriculture.* Report of the National Agricultural Research System Survey Technical Panel, Manila, Philippines, December 20, 1971.

COCONUT

Problem Area	Agency Linkage
PRODUCTION	
1. Varietal improvement and regional trial for earliness in fruiting, high yield, resistance to diseases, and high oil and protein content	BPI, PNAC, UPCA, PHILCORIN
2. Cultural practices such as tillage, fertilization, irrigation, multiple cropping, cover cropping, and variety-environment relations	UPCA, BPI, PHILCORIN
3. Feasible replanting schemes for old plantations	UPCA, BPI, PHILCORIN
4. Tissue and soil analyses to help determine fertilizer requirements under different environments	UPCA, PHILCORIN, Bureau of Soils
5. Chemical and biological control of major pests and diseases	UPCA, BPI, PHILCORIN
6. Feasible size of coconut farms for cooperative farm management	UPCA, PHILCORIN, BPI, PHILCOA, BAEcon, ACCI

Appendix A (continued)

Problem Area	Agency Linkage
PRE-INDUSTRIAL PROCESSING	
1. Development of an inexpensive all-season copra dryer	UPCA, PIC, PHILCORIN
2. Feasible methods of extracting fiber from husks and oil from meat	UPCA, NIST, PHILCOA, PIC
3. Preventing copra contamination by _A. flavus_ (aflatoxin producing mold)	UPCA, NIST, PHILCORIN
PRODUCT UTILIZATION	
Utilization of coconut products and by-products for food, feeds, and industrial purposes	UPCA, NIST, NSDB
MARKETING	
1. Marketing channels of coconut products	UPCA, BAEcon, PHILCOA
2. Development of more effective measures to improve the quality of coconut products in the market	UPCA, PHILCOA, BPI, NIST, Bureau of Standards
3. Local and international demand and supply of coconut products and by-products	UPCA, BAEcon, PHILCOA UCAP
4. Feasibility of cooperative regional marketing of coconut products and by-products	UPCA, UCAP, BAEcon, PHILCOA

SUMMARY STATEMENT ON REGIONALIZATION OF AGRICULTURAL AND RELATED RESEARCH IN SOUTHEAST ASIA

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After country statements which outlined some of the needs and problems of agricultural research, Dr. Marcos R. Vega spoke on regionalization of agricultural and related research. An open discussion followed. The general consensus and major suggestions made during the discussions are summarized.

There was a general agreement that all countries require more well-trained scientists. Since the resources of individual countries in the region are limited, a strong regional center can play an important role in training research scientists. Training within the region has the special advantage of preparing scientists to undertake research on problems affecting agricultural production in their home countries.

The need for a closer cooperation among research workers in Southeast Asia was recognized. The countries of the region have many research problems in common. A strong regional center with a team of specialists in different disciplines can be effective in solving difficult problems that require facilities and equipment not ordinarily available in individual countries. Also, regional cooperation will lead to free exchange of research material and scientific information among research workers.

While there was a consensus among the participants regarding the benefits of regional cooperation in agricultural research, several questions were raised regarding the mechanism of achieving regionalization of agricultural research and the selection of research projects that could be best handled at the regional center as compared with national centers.

It was felt that essential prerequisites to regionalization of research are the identification of important research problems in each country and coordination of research at the national level. This will facilitate the identification of the problems which are common in the region and which should receive priority. Lack of coordination may severely limit the exchange of information and the success of scientific research within a country as well as within the region.

Some research problems require experimentation under local conditions and others can be tackled on a regional basis. Generally speaking, problems requiring relatively more basic research should be investigated at a regional center. Support for well-planned research projects at a regional center like SEARCA will also strengthen the graduate training program.

It was suggested that in identifying regional problems and in developing a good research program, the advice and participation of experts in international and regional agencies should be sought. This could be done by organizing regional symposia and seminars to review the present status of agricultural research in different countries and to identify long-term research projects for the regional center.

There are evidences that agricultural research in the region could have more impact. In this connection, it was suggested that research proposals should be carefully examined and those related to economic development in the region should receive priority.

The possibility of SEARCA giving research grants to centers other than UPCA for the benefit of the region was discussed.

It was indicated that some graduate students will be encouraged to carry out their thesis research at other centers in the region that have competence and facilities. It was felt that support to selected centers and scientists will encourage more active participation and closer cooperation among leading research scientists of the region.

# # #

REGIONALIZATION OF AGRICULTURAL AND RELATED EXTENSION WORK: THE CASE OF SOUTHEAST ASIA[12]

Basic Considerations

Southeast Asia is awake! More than any other time in history it is aware of what is good for its people - a higher level of living in peace and prosperity. But how this quality of life is to be attained in the rural areas of Southeast Asia has remained to be a big question with far reaching importance. It must be admitted, however, that there is no simple way out of the complex problem. First of all, we are running against time. What took Japan and the Western World centuries to develop we want it to happen in Southeast Asia "overnight" (figuratively speaking). Secondarily, we have very serious financial constraint that somehow limit our speed toward development and modernization. Although capital for development is not a "sovereign master" of modernization itself, it is recognized to be an important element in development. Its importance increases as the goal of development becomes urgent. Thus capital can be considered as an accelerator of development because we can "buy" time with it. For instance in the area of rice research, it only took the International

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[12] Paper presented by Dr. Tito E. Contado, Director of Extension Education. U.P. College of Agriculture, College, Laguna.

Rice Research Institute (IRRI) about five years to develop a very high-yielding variety (IR-8) with its adequate financial support whereas it took the UPCA seven years to develop the C4-63.

If we had to await until we could make our own laboratory equipment, tractors, cars, etc., where would we be today? Somehow, the money constraint is real and it cannot be taken lightly in any development plans and action.

These basic considerations: the urgency of development and the financial constraints should challenge our imagination and creativity specially in the area of efficiency and effectiveness in which scarce development resources in the region could be utilized to enhance and hasten agricultural and rural development. Maximizing the utility and impact of whatever developmental resources are available must be a regional goal. Waste must be avoided. This implies that costly (in money, time and high-level manpower) basic researches, with regional applicability should not be unnecessarily duplicated; high-level manpower and costly developmental facilities (i.e. University laboratories, experiment stations) should not be underutilized or misused, and innovations in production technology, in developmental approaches and in the social dynamic aspects of development should not be held in secrecy but must be shared throughout the region as fast as possible wherever applicable.

According to C. W. Chang, there is a wealth of useful information accumulated in different parts of Southeast Asia either through expensive research or through the trial and error method of farm people. If this information can be made available in one form or another, the information will help very much to facilitate agricultural development.[13]

It is in these areas of concern where, I believe, SEARCA has a significant and vital role in the region. It is for the same reason that SEARCA and the U.P. College of Agriculture should be expected to support and foster the idea of regionalization of agricultural and related extension work.

The Concept of Regionalization of Agricultural and Related Extension Work

There are two realities about Southeast Asia that must be recognized in the development of the concept of regionalization of agricultural and related extension work. The first is the fact that Southeast Asia in the SEAMEO is not a unit politically; it consists of 8 sovereign states. Each country has its own national agricultural extension program. Because agriculture is a science of localities, national programs of agricultural and related extension work is an obviously desirable feature of national development efforts. Strengthening the national extension programs should be a serious concern by each country in the region. One fast and economical way of doing this is by working in cooperation with the other countries in the region. This is a great possibility because of the second reality about Southeast Asia i.e., it is a geographical unit. Ecologically, sociologically and economically, in general, it is different from the other regions of the world. Janlekha observed that the countries of the region have certain degree of commonness in terms of physical, social and economic environment, patterns of land utilization, major crops and crop yields, farm organization and needs and problems.[14] The problems at the farm level that Janlekha observed to be common in the region are low productivity (including low yields, big losses due to damage in the fields and storage), lack of technical know-how, unavailability of the necessary yield-raising inputs on the locality, scarcity of credit for operational expenses, small size farm and land tenure problems. At the sectoral level, the problems common to the countries in the region include unfavorable input/output relationship, small size of market for farm products, inadequate water control and transportation facilities, shortages of trained manpower for extension work, problems inherent in small enterprises, and presence of unfavorable institutional arrangements.[15/] In a similar line of observation, Myrdal notes that "the basic fact to account for the low degree of economic development in South Asia is that its agricultural output, whether measured per hectare or per man engaged, is lower than that of most major regions of the world.[16/] He also noted that compared to other regions South Asia have small holdings and the type of agriculture, such as paddy and plantation farming, require intensive use of labor.

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[13] Chi-Wen Chang, Rural Asia Marches Forward, College, Laguna: UPCA Textbook Board, 1969. p. 86

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[14] Kamol Janlekha, Southeast Asian Agriculture Today, SEARCA, College, Los Baños, Laguna, Philippines. pp. 22-23.

These are the conditions and problems that extension agents in each of the countries in the region have to cope with. While work is being done to overcome these problems in each country with varying degrees of success, results of studies on these problems which are usually a product of long and expensive research should be pooled among and shared to all countries of the region as speedily as possible. In this spirit of pooling together experiences and research results and sharing these with all countries in the region, the idea of

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[15/] Ibid.

[16/] Gunnar Myrdal, Asian Drama: An Inquiry Into the Poverty of Nations, Vol. 1. p. 415

regionalization of agricultural and related extension work becomes meaningful and essentially useful for rapid development of the region. In consideration of the two realities about Southeast Asian agricultural extension at the regional level should not be viewed as supplanting national extension programs; rather, it should be viewed as supplementing and complementing national extension efforts. It should facilitate and enhance the achievement of extension development goals of the different countries of the region.

The need for regionalization of agricultural extension is not new. As early as 1955 the first East Asian Extension Workshop was held in Manila under the auspices of the U.S. AID. An Agricultural Extension Development Center for Asia and the Far East was established in Bhopal, India in 1955 under FAO sponsorship.[17] There is a strong practical reason for regionalization of agricultural and related extension work. Research, wherever it is located, is very costly and it usually takes time to develop new technology. If new technology and information generated by research institutions are not applied by as many people and as fast as possible, investment in research create little impact on development and well-being of the people.

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[17] C. W. Chang, Loc. cit. p. 72

Although it is widely recognized that extension work at the regional level is essential as evidenced by FAO's establishment of a regional commission on agricultural extension, known as the Asia and the Far East Regional Commission on Agricultural Extension in 1966.[18], there seems to be much more to be desired in making regional extension a vital force in the development of the region. This is especially true with respect to the estension functions of agricultural colleges in the region. The seminar on Asian Agricultural College and University in 1970 noted that except of some of the agricultural universities in India such as the Punjab Agricultural University, most of the agriculture colleges and universities in Asia do not have national responsibility for research and extension.[19] This goes without saying that most agricultural colleges and universities in Southeast Asia do not have regional responsibilities in research and extension. And yet, the seminar noted that these institutions are expected to be conversant with the priorities in national agriculture problems, the best available technologies and the most efficient methodology for disseminating the technology to the general public. How can the university develop and retain such expertise if it does not, in fact, engage in these activities itself? If the agricultural college or university has no extension activities, how can it participate in regional extension activities meaningfully and effectively? In this area of concern, SEARCA can perhaps provide some degree of leadership and mechanism in which colleges of agriculture in the region may be stimulated to develop their extension programs at the national and regional levels.

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[18] Ibid p. 87

[19] J. W. Rigney and R. W. Cummings, Report on the Asian Agricultural College and University Seminar, Raleigh, N.C., North Carolina State University, 1970. p. 31

Some Extension Related Activities with Regional Significance

The UPCA/SEARCA Social Laboratory is one good example of an agricultural extension type of activity with regional importance. This project has been established for purposes of training and demonstration in agricultural and rural development at the village level. Students from the Philippines as well as from the member countries of SEARCA who are preparing themselves for responsible positions of leadership in agricultural extension and rural development should have actual village training experiences in extension type approaches of agricultural and rural development. The Social Laboratory should provide them this opportunity. Visitors to the UPCA and SEARCA from the Philippines and from other countries of the region always seek new ideas, experiences and programs having to do with agricultural and rural development. The Social Laboratory enables them not only to hear new ideas but to see and observe how the development work is being done in Pila, Laguna.

The question as to how extension programs may be carried out effectively or how agricultural and rural development can be hastened need to be studied constantly. Development is a process and every level attained present different kinds of perplexing problems. The UPCA/SEARCA Social Laboratory at Pila, Laguna provides opportunities in which rural development approaches are tried, studied, and demonstrated.

Presently, in the Social Laboratory area, the institutional approach to rural development and the partnership between the rural people and the government in rural development are being pursued.

The institutional approach is being carried out in the Social Laboratory area to change subsistence (or almost subsistence) farming to modernized farming and to provide the needed socio-economic structure in the village that will support a sustained and progressive technological, economic and welfare growth.

In the past, it was thought that the (only) problem of agricultural development was the lack of technical know-how in the part of the farmer. But with the entry of technological revolution in

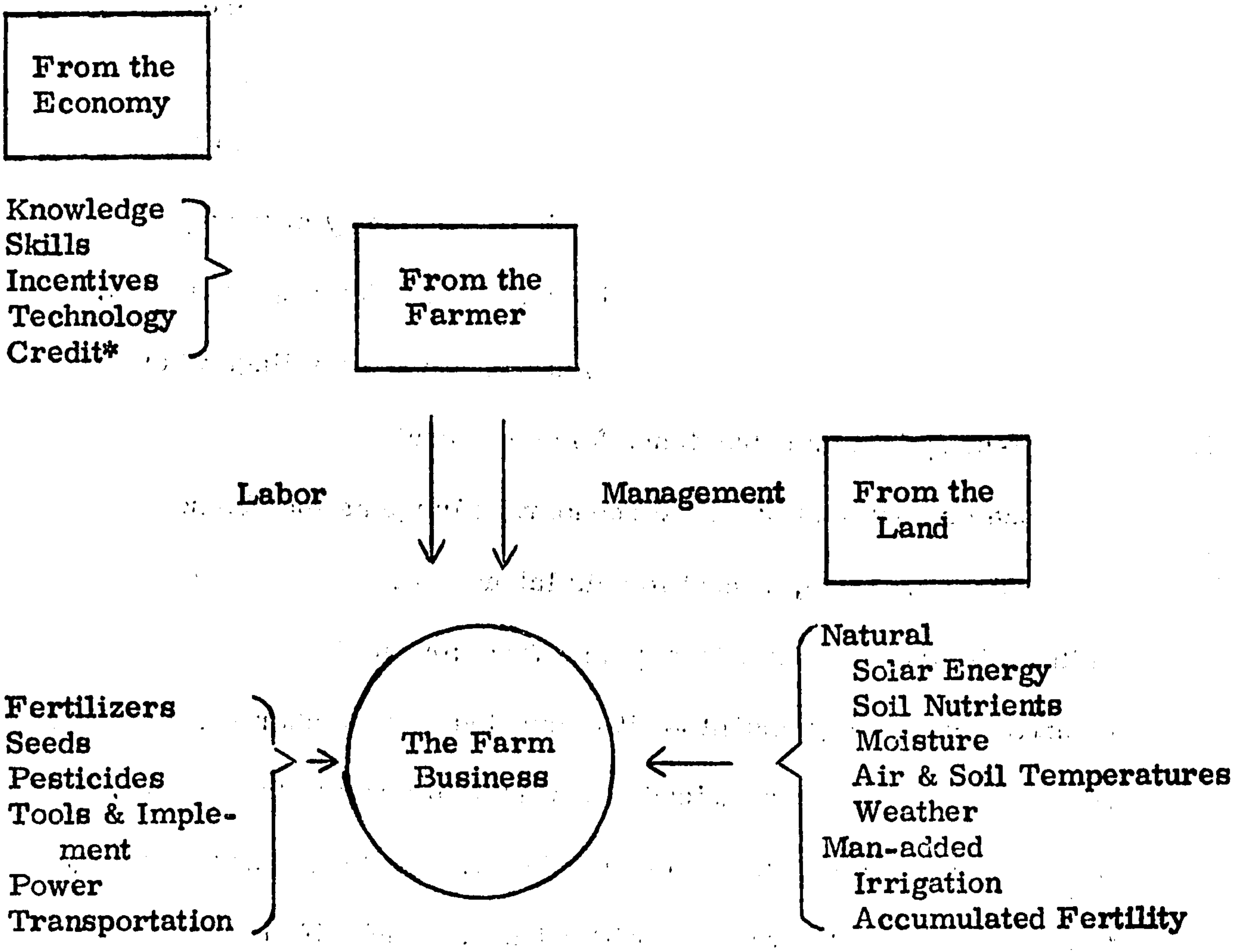
Southeast Asia and the advent of agricultural extension programs in all the countries of the region the impact has not been as great as expected. Many farmers "resisted to change"; some adopted recommended practices and production input temporarily and reverted back to the old practices specially when the field technician was pulled out from the village. However, researches on farmers' response to innovation in agriculture and health practices show that recommended cultural practices such as thorough soil cultivation, weeding, straight row planting, and the right age of transplanting were readily adopted even by subsistence farmers. This indicates that even subsistence farmers do change, but only when the change is within their means and if it pays. In health campaigns, the introduction of toilet in the Philippine barrio was resisted for decades until toilet bowls could be made by the farmers themselves from comparatively cheap and available materials — cement and sand. It may be noted also that small farmers around trade and market centers adopt much more recommended farming practices and purchased inputs than their equivalent in isolated villages. The differences of responses between the small farmer around trade and market centers and those in remote villages may be seen in terms of the differences of the economic structure where they are located.

The conditions under which the farmer around the trade areas operate may be seen in Illustration A. It should be noted that his farm business is a part of the economy that provide him knowledge, new skills, technology, market or project incentives and credit. Fertilizers, seeds, pesticides, tools and implements, power and transportation are locally available for his use in the farm business. Because of these conditions provided by the economy at large, the land that he tills may have irrigation and the needed improvements.

On the other hand, the condition in the remote village where the self-sufficient or subsistence farmer operates is devoid of the influence or contribution of the economy at large as may be seen in Illustration B. Here, except for his labor and the natural elements in the soil, there is little that go into farm production. The market incentive is usually absent — little surplus may be shared with relatives and neighbors instead of it finding its way to the market. It should be noted that providing new ideas, knowledge and technology to the farmer in Illustration B will not make much difference to the farmer. Even if the farmer is convinced that fertilizer increase yield if it is not available, or if he cannot afford to buy it, or if increased yield cannot be marketed with reasonable profit, the farmer will not use it. Dean C. W. Chang use to say: "under the present rural situation (where local farm services are not present) how much can technical know-how or modern technology be of help?"

Illustration A

INPUTS INTO MODERN FARMING



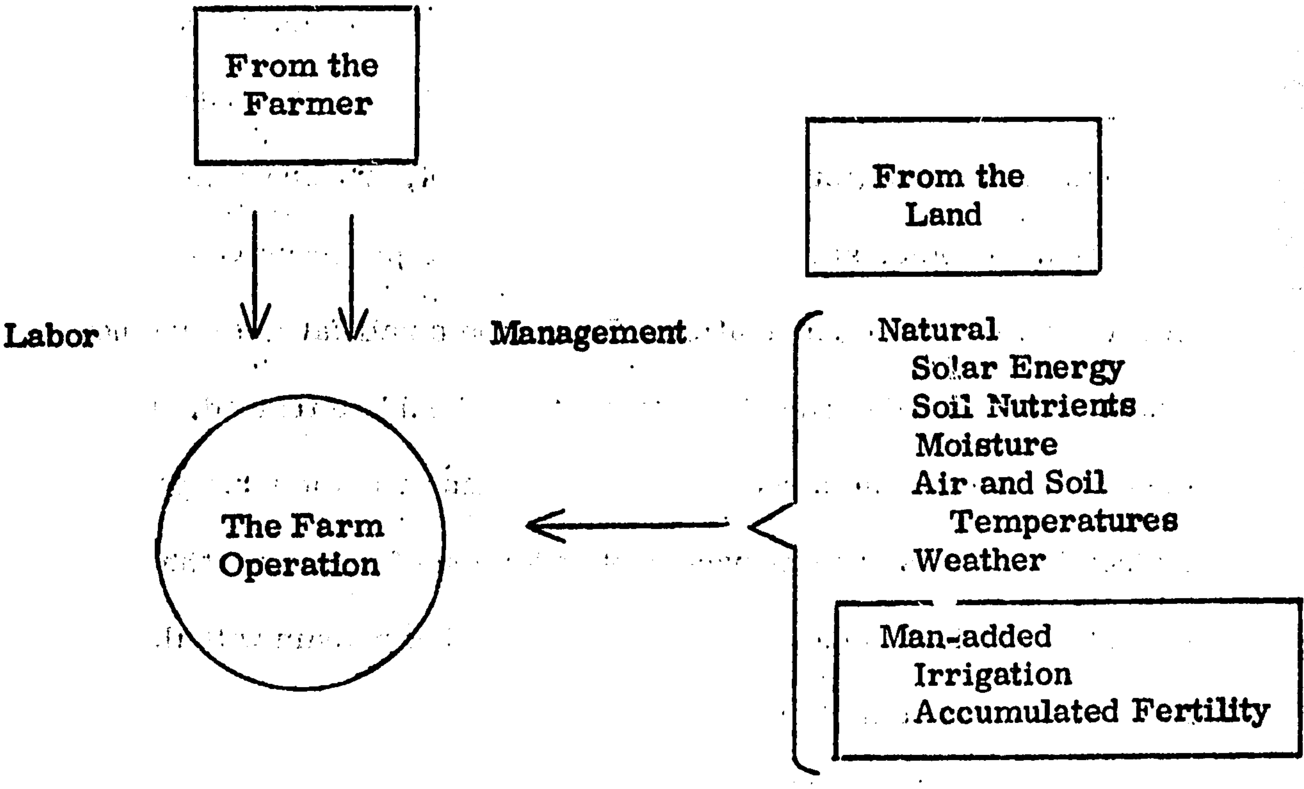
SOURCE: A. T. Mosher, Creating a Progressive Rural Structure, Agricultural Development Council, New York, 1969, p. 2

*Added to the original

Illustration B

INPUTS INTO SUBSISTENCE FARMING

INPUTS INTO SUBSISTENCE FARMING



With this analysis, it becomes apparent that agricultural and rural development programs must be oriented toward changing subsistence farming to modern farming by assisting small farmers organize themselves into farmers' associations or cooperative so that these associations may be able to provide the much needed economic structure (for supply, credit, market, transportation, irrigation and other services) for sustained and progressive economic growth in the rural communities. Since the small farmers are not used to this kind of economic system, they should be trained. Unless these socio-economic structures are organized and the farm people trained in their use and management, adoption of modern technology is hardly possible; share tenants cannot help but remain with their landlord; and the small owner operator cannot help but be bound to the middleman who besides serving as market for their farm products, is oftentimes the source of supplies, cash credit, and "technical service".

The Social Laboratory at Pila, Laguna, is currently changing the condition in Illustration B into the conditions of Illustration A. In barrio Pinagbayanan, for example, a group of 19 farmers did not know what to do regarding the problems of lack of irrigation water, credit, production input and low price for their rice. With the guidance and leadership of the Social Laboratory project leader and agriculturist, these farmers got organized into a registered farmer association. As an association, these farmers were able to get credit of about ₱10,000.00 from the rural bank, purchase in an installment program two irrigation pumps and borrow production input money. Now the farms that could be planted to rice only once a year with the highest yield of about 30 cavans per hectare could be planted twice a year or five times in two years with a recorded yield of 104 cavans per hectare per season. There are now five well-organized farmers' associations in five barrios of Pila under the guidance of the Social Laboratory staff.

Since the UPCA/SEARCA Social Laboratory is working on problems which are generally common in the region, it is hoped that guidelines and principles can be developed which will have regional applicability. As such the UPCA/SEARCA Social Laboratory can be considered as an extension type of activity with regional importance. To fit these principles into the solutions of local problems, different colleges of agriculture may put up small scale social laboratory. In the Philippines, for example, three state colleges of agriculture will establish their own social laboratories soon.

Two other extension type activities with regional importance are study tour and seminars and short non-degree courses for

Southeast Asian and other Asian participants. Under the leadership of SEARCA Exchange Professor Chi-Wen Chang, two study tours and seminars have been conducted in Taiwan. Both were attended by participants from the Philippines and other Southeast Asian countries.

More Activities on Regional Extension

If regionalization of agricultural and related extension work is to make a real impact the few that have been started should be augmented with a few more selected and complementary extension activities. Among these should be the following:

1. Regional Extension Task Force to service member countries of SEARCA. The work of this task force will be to gather from member nations new ideas and knowledge in agricultural and rural development and bring these to the greatest possible number of people who could utilize these effectively under actual conditions. The task force can work through the colleges and universities of agriculture with designated counterparts. It can provide technical advice to the governments of the member countries on the area of planning and carrying out national programs of agricultural and rural development.

2. Regional communications system. Since a communication system cannot function without ideas or information that must be communicated, it becomes a necessity that there be a place where different information materials can be pooled, studied and selected, and kept after their use. For this purpose, the Documentation Center of SEARCA will provide this function. The mechanism in which the new information from the center could be disseminated may vary depending upon the type of information and audience being considered. A mechanism that will facilitate exchange of ideas such as extension journals, bulletins or newsletters and workshops would be appropriate for certain purposes. For other purposes, prepared teaching materials documented case studies in form of films will be useful. Mass media such as the radio may have good possibilities.

Concluding Statement

In viewing Southeast Asia as a unit of analysis in agricultural and rural development, a strong sense of urgency to develop if fast - to change its low output per unit agricultural land and per unit of labor into a much higher level is indeed pervasive. With an extremely high population growth, limited land area and scarce internal developmental resources, agricultural and rural development of Southeast Asia definitely require imaginative and creative approaches. It calls for compassionate, dedicated and dynamic leadership from the village to the regional levels. Because Southeast Asia is made up of several sovereign states, the sense of interdependence among these countries must be cultivated and pursued. Theories and research in the area of forms of relationships in relation to productivity indicate that the interdependent form of relationship is more sophisticated but more productive than relationships characterized by dependence or egocentric independence. In this regard, member nations of SEARCA must continue to study and identify areas of concerns common to them because the secret of successful interdependent relationship among individuals or nations is in the commonness of needs and motives and the mutuality in which responsibility, benefits and satisfaction are shared. On the basis of this conceptual framework there can be no doubt that regionalization of agriculture and related extension work can be one of the imaginative and creative approaches in maximizing the returns from investments in research and training and in enhancing agricultural and rural development of the region.

# # #

SUMMARY STATEMENT ON THE REGIONALIZATION OF AGRICULTURAL AND RELATED EXTENSION WORK: THE CASE OF SOUTHEAST ASIA

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The discussion on extension was focused on certain problems that were considered of regional concern. The nature of SEARCA and the purpose for which it was organized provided a perspective within which the concept of regionalization of agricultural extension was viewed.

Feelings were indicated about the impracticability of regionalizing extension because of the varied problems and needs that are peculiar to each country in the region. However, it was brought out in the discussion that the possibilities of regionalizing extension were not in the context of directly working with farmers; rather, working indirectly with them. The possibilities of regionalizing extension were identified in the following areas: (1) Training of extension personnel (an example of an indirect way of influencing end-users e.g., farmers, producers, etc.), and (2) Sharing information with others in the region that can be supplied to end-users of technology. The ideas expressed by the seminar participants in relation to these two areas are presented in the following sections.

Training of Extension Personnel

1. A view was expressed that the training of specialist extension personnel is the concern of higher education and research orientation in their training, the concern of research at the national level. Perhaps, a closer liaison among institutions of higher learning could take care of the training needs of personnel.

   However, it was pointed out that higher education, research and extension are interrelated activities and although training of workers can be done at the national level, international centers also carry productive results which must be tested locally. Certain principles of training developed at a regional institute can be adapted to local condition.

2. In reality, if extension agents are to perform effectively, a training program has to be planned for them. Although it is difficult to elevate a training program to a regional level, we can recognize certain merits of training at this level, particularly in the problem areas of extension that have regional applicability. The purpose of training, however, has to be carefully identified.

The sending of itinerant training teams to other countries to work closely with local counterparts was suggested as a possible training approach. Seminars, workshops, and study tours were also mentioned as other approaches.

Projects, such as the Social Laboratory in Pila, Laguna, Philippines although localized and specific to a situation, can provide guidelines that may be useful in understanding certain processes of organizing rural development, for possible application in other countries in the region.

4. It has been observed that several agricultural educational institutions in the region have not taken the responsibility of recognizing extension as one of its legitimate functions. If SEARCA is to work with these colleges and universities in the region, it can serve a purpose by exploring the possibility of developing research and extension as legitimate functions of the institutions.

5. There are various organizations in the region which recognize training as one of its objectives. There are possibilities of establishing working relationships with them.

Effective coordination among these organizations can be worked out. In this regard, the national government of the country where training is held can take care of matters on coordination.

Sharing Information with Others in the Region

1. There is a definite plan for a system or mechanism in which ideas in agriculture and rural development can be shared by as many countries in the region as possible. However, this does not free us from problems such as language barriers, peculiarities of member countries, etc.
2. The different means of communications made available to the region such as written media may have limitations depending on the people to whom the materials are addressed. For example, materials that are useful to policy-makers and those at the implementing level may not be meaningful to workers at a lower level in the extension service. Materials for certain level of workers in the region can be shared.

The use of radio for communication has to contend with the problems of language and inadequacy of radio network in the region.

3. There are information centers on agriculture in different member countries. There is a possibility for SEARCA to assist in the pooling of such information that are available in other countries in the region.

4. Sharing of information and exchanging of ideas between extension people in the region through direct exchange of notes on their work and their extension experience were mentioned.

5. Finding means of grouping farmers in certain parts of the region to create situations to help them realize common benefits was suggested.

6. There is an urgency in some countries in the region for certain information on vegetable and animal production that are applicable to their situations. There is a need to select priorities in this regard toward which regional extension efforts may be directed.

The Role of SEARCA

In the discussion, it was indicated that SEARCA can contribute to the realization of plans in relation to regionalization of extension, particularly in the following aspects:

1. Studying more thoroughly the manpower requirements in the region as a basis for projecting a training program.

It was explained that SEARCA as proposed by SEAMEO is for graduate research and instruction in agriculture, and its facilities will be geared to — if necessary. However, training needs in the region, such as number of professionals that need to be trained, for what purposes, at what level, etc., will have to be assessed more carefully and training programs should be related to them.

2. Efficient dissemination of needed knowledge to member countries and exchange of information among them. This can be accomplished through the documentation center that will be established by SEARCA in Los Baños. Such information will cover varied subjects in agriculture and related fields.

   It was indicated that each member country would have a responsibility in contributing its share to the pool of information at the Center.

Problem Areas that were Expressed during the Discussion

1. Need for effective cooperation and coordination among those organizations in the region performing similar or related activities to those of SEARCA.

2. Identification of priorities of problems in extension that are of regional concern, toward which regional efforts should be geared.
3. A more thorough assessment of needs in manpower development in the region to determine particular fields of specialization needed, number of top level professionals who can be reasonably trained and absorbed for employment in their country, etc.
4. Determine what training programs are needed and at what level.
5. Need for interrelating instruction, research and extension efforts within each member country and among them in the region.

# # #

UNIFORM REGIONAL TESTS OF SELECTED VARIETIES OF CROPS WHICH ARE POTENTIAL SOURCES OF PROTEIN IN SEVEN LOCATIONS IN SOUTHEAST ASIA

I. Importance:

Substantial progress has been attained in the production of high-energy crops like the cereals in developing countries which are traditionally short of food supply. This has been made possible through national and international cooperative efforts of countries comprising the developing region. But while the problem of calories deficit is gradually being won, that of malnutrition, i.e., the lack of protein and minerals in the diet, will remain to be a chronic one.

The problem of malnutrition will become more acute as animal resources will become more scarce. By year 2000, world population will be between 6 to 7.15 billion, with the greater concentration of people in the regions already suffering from population and food pressures. These regions will be so populous that the area presently used for raising livestock, poultry and hogs will have to give way or at least reduce greatly to accommodate the other needs of the growing population.

It is essential that we turn to the use of plant proteins which can be produced in greater quantities and at cheaper cost.

Soybean, for example, will produce 29 times as much protein as one would from beef from an acre of land.

Some of the crops, which are good sources of proteins and minerals are the legumes, sweet potato (including tops), and other vegetables (Tables 1, 2 and 3).

The crops under consideration in this proposal are: (1) soybeans (*Glycine max*), (2) mungo bean (*Phaseoulus aureus*), (3) peanut (*Arachis hypogaea*), (4) cowpea (*Vigna sinensis*), (5) sweet potato (*Ipomea batatas*) and (6) high-lysine corn.

These crops are commonly grown for food in Southeast Asia. For each of these crops, there are excellent breeding programs in existence in certain institutions in the Region and some outstanding varieties have already been identified. Corn varieties with lysine content twice that of ordinary corn have been bred in the Philippines and Thailand. Varieties of soybean, mungo and cowpea which have contrasting plant types which provide built-in ecologic adaptation to specific seasons in a tropical climate have been developed in the Philippines. All countries in Southeast Asia, especially those which have not as yet established their own improvement program in any of these crops will mutually benefit from each other's programs if a cooperative effort on plant material exchanges and uniform variety testing is undertaken in the region. This was the experience in rice, wheat and corn, in which superior strains which were developed in one regional center proved to have a very wide range of adaptation so as to give dramatic yields in almost any country or region where they were grown.

II. Objectives:

1. To assemble the most promising varieties of soybeans, mung bean, peanut, cowpea, sweet potato and high-lysine corn in seven Southeast Asian countries and systematically test them in uniform yield trials in these seven countries.
2. To determine common problems in production pertaining to pests, diseases and nutrition inherent to the aforementioned crops so as to form a base for further cooperative work.

III. Procedure:

The varieties of crops which will be included in the uniform inter-Asian trials will be grouped as follows:

1. One group of soybeans for dry bean production which mature in less than 100 days
2. One group of soybeans for dry bean production which mature in more than 100 days

3. One group of vegetable soybeans
4. One group of mung bean
5. Two groups of cowpea, one for fresh vegetables,
   the other for dry beans
6. One group of peanut
7. One group of sweet potato
8. One group of high-lysine corn

The uniform trials will be conducted at one ideal location in the Philippines, Malaysia, Thailand, Indonesia, Vietnam, Laos and Khmer Republic. Two of the leading varieties of each crop from each of the seven countries will be identified and selected, based on certain standards, i.e., earliness, standability, high yield, and they will be put together to constitute the entries for the uniform trials. Each group of crops will have a maximum of 20 entries, although the number may go to as low as 10, if there are not enough varieties available which are worth including in the test.

The experiments will be conducted in uniform or standardized plot sizes, plant populations and fertility levels normally recommended for each crop.

Data on yield and other agronomic characters will be taken. Chemical analysis for protein and lysine will be made to determine hectare yields of protein per day and to see how the level of protein and amino-acid is influenced by changes in the environment. The trials will be conducted for four years.

Each participating institution in the 7 countries will have a team of agronomists who will handle the trials and an analyst who will do the chemical analysis work. Countries which do not have access to laboratory analysis services will send the seed samples to the College of Agriculture, University of the Philippines.

IV. Proponent Agency and Workers:

U.P. College of Agriculture

R. M. Lantican, Project Leader
R. L. Villareal, Co-worker
V. R. Carañgal, Co-worker

V. Cooperating Institutions:

An agricultural institution will be selected in each of the other countries, namely, Malaysia, Thailand, Indonesia, Vietnam, Laos and Cambodia. Institutions which are a part of existing national programs on crop improvement and seed certification will be chosen as cooperators.

VI. Duration:

The study started in FY 1970-71. It will continue until 1974-75.

VII. Budgetary Requirements:

Refer to Table 4.

Table 1. Some crops as potential source of protein

Crop	Yield per Hectare in Metric Tons	Edible Yield per Hectare in Metric Tons	Maturity in Days	Percent Protein in Edible Portion a/	Protein Yield per Hectare per Day in Kilograms	Number of Persons a Hectare of Crop can Support per Day b/
Rice	5	4	120	7.4	2.47	49.2
Corn	3.5	3.2	110	4.9	1.42	28.5
Sweet Potato						73.2
Roots	20	18	100	1.1	1.98	39.6
Leaves	6	6	100	2.8	1.68	33.6
Gabi						71.6
Corms	15	12.95	120	2.5	2.70	54.0
Leaves	4	2.2	120	4.4	0.81	16.2
Petiole	5	4.2	120	0.2	0.07	1.4
Cabbage	20	20	60	1.7	5.67	113.4
Mungo	1	1	60	20.0	3.32	66.4
Cowpea						
Pod	12	10.08	60	3.7	6.20	124.0
Drybean	2.5	2.5	70	20.4	7.29	145.8
Soybean (Dry)	2	2	120	40.0	6.67	133.4
Soybean (Green)	6	3.6	65	14.4	7.97	159.4
Tomato	14	14	80	1.0	1.75	35.0
Mango	18	13	365	0.5	0.02	0.4
Banana	30	20	365	1.0	0.06	1.1

a/ - Values are from Food Composition Table, Food and Nutrition Research Center Handbook 1. 4th Revision. Manila, 1968.

Table 2. Amino acid yield per hectare per day in grams

Amino Acid	Crops						
	Rice	Corn	Sweet Potato (Roots)	Gabi	Mungo	Cowpea	Soybean
Arginine	232	76	101	202	324	981	61
Histidine	89	57	46	69	112	296	228
Leucine	195	170	126	220	256	718	405
Isoleucine	151	79	103	130	181	541	414
Lysine	121	78	143	225	511	507	730
Methionine	106	34	60	69	72	274	146
Cystine	20	11	2	10	11	29	35
Phenylalanine	104	81	111	222	192	518	318
Tyrosine	37	22	1	51	76	200	177
Threonine	99	96	82	120	128	360	269
Valine	163	83	122	162	196	544	381

Table 3. Number of persons a hectare of crop can support per day for different nutrients

Crop	Calories	Calcium	Iron	Vitamin A	Thiamine	Riboflavin	Vitamin C
Rice	61	2	33	0	18	9	
Corn	27	1	10	25	42	24	488
Sweet Potato	138	138	405	992	140	107	1,370
Roots	122	85	105	324	100	40	1,050
Leaves	16	53	300	668	40	67	320
Gabi	55	86	178	771	120	62	660
Corms	46	29	72	0	108	24	180
Leaves	6	41	66	747	10	34	433
Petiole	8	17	41	23	2	4	47
Cabbage	42	178	194	50	93	74	3,441
Mungo	30	17	79	4	31	20	28
Cowpea							
Pod	42	160	150	348	159	168	1,008
Drybean	64	18	193	Trace	129	62	0
Soybean	34	41	169	0	41	17	Trace
Soybean (Green)	36	87	194	6	1,257	614	251
Tomato	17	6	117	257	58	39	846
Mango	1	Trace	502	18	2	1	279
Banana	3	110	2	1	1	2	237

Table 4. Budgetary Requirements of the SEARCA High Protein Project for July 1, 1972 to June 30, 1973

U.P. College of Agriculture

I. Personal Services:	
1. One Research Assistant at ₱6,900/annum	₱6,900
2. One Analyst at ₱7,320/annum	7,320
3. One Laborer at ₱10.00/day, 22 days/month	2,640
4. Casual Laborers (for seed maintenance, yield trials and chemical analysis)	7,000
5. Honorarium of Research Team, ₱100 each/month	3,600
Sub-total	27,460
II. Maintenance and Operating Expenses:	
1. Supplies	
a) trials and seed maintenance	3,000
b) chemical analysis	6,000
2. Travel	500
3. Sundry (stamps, telegraphic and freight services)	1,200
Sub-total	10,700
TOTAL	₱38,160

Outside Locations

I. Personal Services:	
1. Casual Labor	3,000
II. Maintenance and Operating Expenses:	
1. Supplies	2,000
2. Travel[20]	
a) transportation of two research workers per country, $300/person (300 x 2 = 600)	3,840
b) per diem at $20/day (5 days x $20 x 2 = $200)	1,280

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[20] Conversion rate used, $1 = ₱6.40

3. Sundry	1,000
Total Per Location	₱11,120
Total for 6 Locations: Vietnam, Indonesia, Malaysia, Thailand, Laos and Cambodia (₱11,120 x 6)	₱66,720

Summary Budget for 1972-73

I. Personal Services		₱ 45,460
1. One research assistant	6,900	
2. One analyst	7,320	
3. One laborer	2,640	
4. Casual laborers	25,000	
5. Honorarium of research team	3,600	
II. Maintenance and Operating Expenses		59,420
1. Supplies	21,000	
2. Travel	31,220	
3. Sundry	7,200	
GRAND TOTAL		₱ 104,880
Approximately:		$ 16,400

HIGHLIGHTS OF ACTIVITIES
(July, 1970 to date)

1. Observational survey trips to Malaysia, Indonesia and Thailand were conducted by Drs. R. Villareal and V. Carangal from October 12 to November 5, 1970, primarily to obtain first-hand information about individual country's program on legume improvement, research facilities, research personnel and problems affecting production of leguminous crops. A similar survey trip to Laos and the Khmer Republic was conducted from July 5 to 16, 1971.
2. A meeting of probable cooperating scientists from Indonesia, Malaysia, Thailand, Vietnam and the Philippines was called at the U.P. College of Agriculture on January 14 to 15, 1971, while the group was assembled for the Inter Asian Corn Conference. The details of plans of implementation of the regional yield trials of high protein crops were discussed.
3. Seeds of most entries of crops included in the regional tests were increased at the U.P. College of Agriculture for distribution to participating countries. Seed of the following has been distributed:

Seed	Recipient Countries
High lysine corn (11 entries)	Thailand, Indonesia, Laos Cambodia and Vietnam
Cowpea (Dry (9 entries)	Thailand, Laos and the Khmer Republic
Snap (7 entries)	Thailand, Laos and the Khmer Republic
Mung bean	Thailand, Vietnam and Indonesia

4. One yield test each for mungo, cowpea and high lysine corn have been completed at the University of the Philippines during 1971-1972.

5. A workshop on varietal improvement for high protein crops will be held a UPCA from June 17-20, 1972, to review individual country programs on these crops and how the products of these programs can be mutually used to advantage by SEARCA member countries. Entries for the uniform yield trials, and the standardized procedures that will be used in conducting the tests will be discussed and finalized.

MAIZE DOWNY MILDEW RESEARCH PROJECT: A PROGRESS REPORT

Ofelio R. Exconde, Irineo J. Dogma Jr. and Francisco A. Elazegui[21]

Corn (Zea mays L.) ranks second only to rice as a staple food in populous Southeast Asia. Like other cultivated crops of importance to man, however, the corn plant is afflicted with several diseases of biogenic origin most important of which is DOWNY MILDEW. This malady, destructive as it is, is a major limiting factor in corn production in the region; indeed, it has in recent years caught the immediate attention and concern of both the farmers and researchers. Consider the following recorded data on the incidence of the disease on a per field basis: 20-90% in Indonesia; 40-100% in the Philippines; 70-95% in Taiwan; 10-100% in India. These figures, transcribed more meaningfully, mean a reduction in total yield from 6.0 to 100% depending on the onset of infection relative to the age of the corn plant.

It might be heartening to the delegations from Malaysia, the Khmer Republic (Cambodia), Laos and South Vietnam that there is as yet no recorded occurrence of the dreaded maize downy mildew in their respective country. However, judging from the epidemiology and geographical occurrence of the disease in Southeast Asia, as well as from the fact that corn is grown extensively in these countries, there is very little doubt that the disease is there, awaiting discovery even if in isolated pockets or localities only.

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[21] Respectively, Associate Professor and Chairman, Assistant Professor and Instructor, Department of Plant Pathology, College of Agriculture, University of the Philippines, College, Laguna, Philippines.

Our research project, launched in July 1971 with the generous funding from SEARCA, stemmed primarily from the need for a critical investigation on a regional scale of a) the disease and the species of fungi associated with it, and b) the utilization of the information obtained therefrom in the formulation of practical and effective control measures. For brevity, we shall not touch on the salient information and specific areas of study relating to the project inasmuch as these we have already expounded on in detail in our project proposal which appeared in full in the report on the 9th Meeting of the Agricultural Advisory Council for SEARCA held in Bangkok, May 4-7, 1971. Instead, let me now give you a report on what we had accomplished in the interim from July 1971 to January 1972.

Brief Highlights

I. The Pathogen Phase:

This phase of our project calls for an inclusion of all downy mildew fungi on maize and related graminicolous hosts (sugarcane, sorghum, other grass "weeds") in Southeast Asia - defined here to include Taiwan, Singapore and India in addition to member countries of SEARCA. There are in the region eight (8) different species of fungi reported to incite downy mildew on corn. All but one of these are species of Sclerospora; Scleropthora rayssiae in India is the exception.

We are at present utilizing the Philippine species, Sclerospora philippinensis, as a model organism with which to evolve the necessary techniques and methodology that could be used in dealing with the other species occuring in Southeast Asia as geographically circumscribe above.

A. Monospore Culture. Earlier host range studies indicated to us the absolute necessity of first "taming" the downy mildew fungi. This is in itself a formidable endeavor inasmuch as the latter are obligately parasitic.

We have devised methods to isolate single spores of S. philippinensis. The spores or conidia formed on diseased corn leaves in the field or in the laboratory are tapped onto water agar and later cut out singly under a stereoscopic dissecting scope. Two methods are used in the attempt to grow the fungus using single spores on live plants: (1) By inoculation of excised, 3-day old leaves of a susceptible corn variety (PH 801) suspended in 5% aqueous solution of sucrose or in 5% sucrose plus 20 ppm kinetin solution. The set-up is incubated in the laboratory room or in a refrigerator (20°C). The excised leaves remained green and apparently healthy for up to 7 days. No infection, however, could be detected during or 3 days after this period of time. (2) The other method consists of introducing single spores, isolated similarly as above, into the whorl of potted corn seedlings, the latter disposed in plastic bags and left to stand in the laboratory. Here, too, no infection could be detected a week after inoculation.

As stated above, single spores can be isolated. We hypothesized that the foregoing failures to infect the host plant point to a consideration of the environmental conditions necessary to bring about infection. That such infection failures are not due to the non-viability of the conidia is evident in the high percentage germination (90-95) of single spores in water or on water agar. On this count, we repeated our monospore infection experiments using the same techniques early last December. This time, however, the inoculated set-ups were placed in growth chambers. The results were encouraging. Localized lesions are formed on the oldest leaves. I shall deal with this again later.

B. Single Conidiophore Culture. Our success in inoculation using single conidia as decribed above is very low - only 3-5% of the total number of set-ups. Early last month, January, we used a third inoculation technique. This consists of using single conidia-bearing conodiophores as inoculum. With this method our chances of success in infection are increased by as many times as there are conidia on a single conidiophore; on the average, 15-25 conidia to a conidiophore. The isolated conidiophores are introduced into the whorl, onto the epicotyl and youngest leaf. The set-ups are inoculated in growth chambers. Here, again, as in the experiments using single conidia, infection is localized in the older leaves.

It is a long-established fact that corn infection with S. philippinensis is systemic. However, alluded to above is the production of localized infection in the older leaves using the three methods briefly described in the foregoing paragraphs. Earlier histopathological study of the disease has shown conclusively that systemic infection is effected only when the fungus reaches the meristematic growing point, its spread thus keeping pace with the growth of the corn plant. Consequently, the localized lesions obtained in our present experiments can be explained by the failure of the fungus mycelium to reach the growing point of the plant. This brings to focus the importance of the growth chambers which, unfortunately, we could not make full use of till the present time due to conflict with other experiments in our department.

C. Culture on Synthetic Media. Several synthetic agar media composed of different levels of inorganic salts and organic carbon and nitrogen sources were tried in an attempt to grow the conidia of *S. philippinensis in vitro*, i.e., divorced from live tissues of corn. White's basal medium and Nitsch's medium were modified and tried also for the same purpose. Newly formed conidia were allowed to dehisce naturally from the conidiophores on diseased corn leaves and allowed to lodge in mass onto the surface of the solidified media. In all cases, 95-100% germination of the conidia was obtained; however, none of the media used sustained further growth of the fungus. Plates, for example, of modified White's medium wrapped with carbon paper to stimulate constant darkness showed longer and more profusely branched mycelia formed from the germinated conidia.

D. Culture on Corn Silk. Young corn stigma ("hair" or "silk"), killed and sterilized by autoclaving, was tried as a natural substrate for the growing of *S. philippinensis* in the laboratory. This likewise failed to support growth of the fungus.

E. Tissue Culture. Tissue cultures of the host are currently giving great promise in the cultivation of the so-called obligate parasites, of which *S. philippinensis* is one. Some workers in India, for example, have reported that *Sclerospora graminicola*, another downy mildew fungus, can be trained to grow on semi-synthetic media by first cultivating it on healthy callus tissues of millet. For S. philippinensis, we are using two methods as follows:

1. Endosperm Tissue Culture. Five - to 15-day old kernels are selected for use after controlled pollination studies were conducted on susceptible sweet corn variety to determine the age of the kernel suitable for endosperm tissue culture. The kernels are surfaced-disinfected, their endosperms aseptically scooped out with a sharp scalpel and immediately deposited on the surface of modified Nitsch's medium dispensed in flasks. Under incubation in an air-conditioned room, callus formation is very slow and does not appear to be capable of progressing beyond twice the size of the original endosperm.

2. Meristem Tissue Culture. The shoots of 2-week old, healthy and mildewed sweet corn plants are cut lengthwise and explants of meristematic tissues removed from the sterile interior. These explants are treated as for the endosperm tissue culture. As in the latter method, the callus appears not to grow progressively.

It must be emphasized that we are presently pursuing further this aseptic culturing of corn tissues. Some necessary chemicals are not yet available to us to reinforce the growth medium. Once callus formation is brought to a certain degree of success, we will attempt to grow S. philippinensis on the callus using single conidia or conidiophores.

F. Freezing the Conidia. One of the difficulties in studying the species of Sclerospora lies in the fact that sporulation, spore germination and initial infection all take place during the early hours of the morning (2:00-5:00 A.M.). If only the conidia could be preserved and kept viable for sometime we can minimize, if not avoid totally the necessary burden of conducting most of our experiments during "unholy" hours. It is in this light that we have attempted to preserve newly formed conidia of S. philippinensis by freezing in a freezer with a temperature of -8°C. The conidia frozen for a day are later allowed to thaw on water agar. These show germ tube initials but the latter failed to elongate any farther. We are now planning to continue our work along this line to obtain a condition for the quick freezing of the conidia like that possible with the lyophilization method used for spores of the more hardy fungi.

Let us now turn to the other aspects relating to the downy mildew fungi.

G. Cytology. Preliminary cytological studies on S. philippinensis indicate the multinucleate condition of the conidia and conidiophores as revealed with acetocarmine. Initial counts gave a range of 7-22 nuclei per conidium. The very unstable nature of acetocarmine makes this nuclear stain good for use for only a few hours. We have tried the Giemsa and Fuelgen stain but these proved inferior to acetocarmine for use in our purpose. We are now working on the cytology of S. philippinensis from hyphal stage to a conidiophore and conidia formation.

H. Leaf Extract and Spore Germination. We have found that leaf extract (1 gm. fresh leaves; 5 ml. water) from a resistant corn variety (MIT popcorn) inhibits spore germination in S. philippinensis. In contrast, extract from a susceptible variety (PH 801) affords spore germination as effective as plain water. We plan to pursue this finding later and try to correlate it with susceptibility and resistance of the host to attack by the fungus.

I. Oospore Formation. We found in 1967 that oospores are formed in mildewed leaves of corn buried in the soil or incubated in moist chambers for 3-6 days. Preliminary studies on the formation of these oospores had already been conducted but the paucity and inconclusiveness of the evidence on hand caution us to state unequivocably at this time that the said oospore belong to S. philippinensis.

J. Oospore Germination. In spite of our present uncertainty as to whether or not the observed oospores belong to the Philippine downy mildew fungus, we have made serious attempts to germinate the oospores. This is because of the great importance of these sexual structures in primary infection in nature, not to mention their significance in the search for a logical explanation to the observation that in the Philippines, for example, resistance of a corn variety is to a certain extent a function of the locality where the plant is grown.

Germination experiments were conducted on the alleged oospores of S. philippinensis as well as those of S. spontanea and S. miscanthi. The oospores, freed of as much leaf material and soil particles as possible, were treated with (1) 5% $KMnO_4$, an oxidizing agent, for 3 hours, (2) 0.5 and 1.0 N KOH for 12 hours, (3) 1.0 and 5.0% EDTA, (4) fresh dung filtrate (cow and horse), (5) snail extract, and (6) exposure to various temperature levels (20, 30, 40°C) for 1-2 weeks. None of these treatments induced oospore germination. Freezing and thawing for 12 hours, light and dark treatments, and suspension in a synthetic medium reinforced with the vitamin thiamine likewise gave negative results.

Oospores in the tissues of naturally infected corn leaves buried in sterile soil also did not germinate as judged by the absence of disease symptoms on corn seedlings grown in the soil rich with oospores.

II. The Disease and Disease Control Phase:

This second phase of our project calls for field experimentations in selected Southeast Asian countries (Thailand, Indonesia and the

Philippines) leading not only to the gathering of precise regional data on corn yield loss due to downy mildew but also to the formulation of effective and economical measure to control the destructive disease.

A. Yield Loss Assessment. Accurate information on actual loss in corn yield due to the downy mildew malady is an important guide in making decisions on whether or not the application of control measures using chemicals will accrue economic benefits to the farmer. Our field experiments attempt to determine yield losses at varying degrees of downy mildew infection at different seasons of the year. At the Central Experiment Station of the University of the Philippines, College of Agriculture (UPCA), 25, 50, 75 and 100% infection in the 1970 wet season gave corresponding yield losses of 20, 43, 72 and 100% for Philippine Hybrid 801 (sweet corn), and 19, 43, 71 and 100% for UPCA Var. 3 (yellow flint). In the 1971 dry season, 27, 50, 73 and 100% infection of UPCA Var. 3 corresponded respectively to yield losses of 15, 21, 44 and 88%. This same variety with 16, 25, 83 and 100% infection in the 1971 wet season had corresponding yield losses of 23, 26, 86 and 100%. The 1971 wet season experiments with Philippine Hybrid 801 had 17, 23, 94 and 100% infection with equivalent yield losses of 27, 30, 90 and 100%, respectively.

B. Screening of Spray Chemicals. Recent local findings have proved that the vulnerability of corn to attack and infection by S. philippinensis decreases with the age of the plant. We are now concerned with the search for spray chemicals that will afford sufficient protection to the corn seedlings from the time of the latter emergence till they are about 3-4 week old. Ten spray chemicals were tested for their efficacy to prevent spore germination in S. philippinensis. The procedure used follows the spore-germination tests recommended by the American Phytopathological Society Committee on Standardization of Fungicidal Tests, 1943. The aqueous fungicidal solutions were made based on percentage active ingredient (g/1.). Percentage spore germination, recorded 2 hours after the treated slides has been incubated in improvised moist chambers, was taken as the index of effectiveness of the chemicals. Polyram-Combi and Granosan at 2.4 and 0.5 g/1., respectively, totally inhibited spore germination in S. philippinensis. Equally good results were obtained with Busan 72 (0.5)*, Dyrene (2.4), Brestan (0.5), Cela (2.0), CP 13,708-1 (0.5) and CP 25,385 (0.5) which gave respectively, 1.3, 1.3, 2.8, 3.7, 6.7 and 8.3% germination. Ortho (0.5), Kitazin

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* Figure in parenthesis indicates dosage in g/1.

(1.0), HOE 6052 (0.5) and HOE 6053 (0.5), respectively with 65.0, 49.6, 33.2 and 28.0% germination, are not as effective as the above chemicals.

Except for Kitazin, Ortho and CP 25, 385, all the chemicals tested in the laboratory were tried out in the field on a susceptible corn variety, UPCA Var. 3. Also included in the field experiments are Udonkor (2.0), BAS 3050 F (1.3), Calixin (1.3) and Benlate (2.4). The experimental plot follows a randomized complete block design, each treatment replicated thrice. The rows of experimental plants were not inoculated artificially, but instead flanked at intervals with rows of plants inoculated artificially before the experimental rows were planted to UPCA Var. 3. This program insured natural infection of the experimental plants although the inoculum density was rather high. The experimental plants were sprayed with the fungicidal solutions two days after the emergence, thereafter daily for 3 weeks. Rows of unsprayed plants served as control. Records on the number of healthy and diseased plants were taken a week after the last spray application, and the percentage infection for each treatment determined.

Cela (4.0), CP 13, 708-1 (1.0), Busan 72 (1.0), Granosan (65.0) and Polyram-Combi (2.4) gave 7.1, 16.7, 16.7, 18.8 and 29.2% infection, respectively, compared to 83.3% infection of the control.

Benlate, Calixin, Dyrene (2.4), BAS 3050 F and Udonkor with 45 50.0, 50.0, 51.4 and 52.4% infection, respectively, did not effe control the disease compared with the control which had 83.8% i HOE 6052 and HOE 6053 at 1.0 g/1. were phytotoxic and likewis effective. Brestan at the same dosage was as effective as Cela; however, it proved to be phytotoxic.

# # #

THE UPCA/SEARCA SOCIAL LABORATORY [22]

I. What is the Social Laboratory?

The Social Laboratory can be defined as a pilot project on agricultural and rural development conducted by a training institution of higher learning such as UPCA and SEARCA in the Philippines, Kasetsart University in Thailand, the Agricultural University in Malaysia, the National Agricultural Center in Vietnam, or the Agricultural University in Indonesia.

To teach Physics, we need a laboratory. To teach Chemistry we also need a laboratory. It is obvious that without a laboratory the teaching of these subjects will be very theoretical or academic. Nobody will ever question it. When we teach Social Science like agricultural extension or community development, do we need a laboratory? Yes, definitely. Without a laboratory, the teaching will too be very bookish.

One may say, without a social laboratory, we still can do some research or investigations in the field of Social Sciences. Yes, this is what some teachers are doing. What happens to such research afterwards? It is published somewhere. The author may get some satisfaction out of it. Is the research result tested or applied? It is seldom the case because there is no definite place or person to make use of it. This explains why our extension teaching has become stereo-typed and very few people will like to take extension as a profession.

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[22] Paper presented by Dean Chi-Wen Chang, Visiting Professor, Department of Agricultural Education, UPCA, College, Laguna.

II. Then, you may like to know something about the UPCA/SEARCA Laboratory. This can be discussed under the following sub-headings:

1. Objectives. We have both long-range and short-term objectives. The former is to "mobilize the human resources to fully develop land and water resources and to transform the present traditional farming into modernized commercial agriculture." We are not contented with the usual objectives of the increase of agricultural production and the betterment of rural life. This is because UPCA/SEARCA both emphasize graduate study and research in agriculture and so we have to go into the field deeper and deeper into it.

   However, such long-range objectives can only be carried out efficiently by stages. So we have the First Five-Year Program for the Social Laboratory. Then we have the Annual Plan of Work to set the targets of achievement and also a Calendar of Work to be worked out every three months in advance to insure the orderly movement of things. Progress can be speeded up by design not by drift, nor by trial and error.

2. Location. It is located in the municipality of Pila, Laguna Province, where UPCA is. The municipality has 13 barrios or villages. It is 22 kilometers away from the campus. It is a rice growing area, with some coconut plantations.

3. Organization. Since the Social Laboratory, is a joint project between UPCA and SEARCA, we have organized a Joint Working Committee, which meets quarterly to approve the program of work, hear progress reports, and make recommendations for improvement. For the field operation we have an Advisory Council composed of the governor of the province, the mayor of the municipality and the representatives of all the national government agencies that are concerned with our work in the Social Laboratory. This arrangement will avoid unnecessary misunderstanding and friction but it will insure better cooperation. It is heartening to report that a Memorandum of Understanding was signed at the

second meeting of the Advisory Council. The Project Leader is now concurrently the Agricultural Adviser to the mayor of Pila.

4. Staff Members. Beginning this year, 1972, our staff members consist of one full-time Project Leader for Field Operation, who is a professor, and also a part-time Leader on Survey, Planning and Evaluation, who is also a professor. Then we have seven resident field technicians and three full-time research assistants.

Every week we have a staff meeting, going over the work of the previous week and discussing the plans for the coming week. Sometimes we invite specialists to come to lead discussion on certain important topics.

5. Staff Training. One week pre-service training was given to them. Then after 10 months of experience in the field, a two-week study tour in Taiwan was arranged for them. In this study tour two local leaders and a rural bank president were included. Now they came back full of enthusiasm and work together as a team. They also attended a two-week seminar on rice culture in IRRI the last year. The field staff must keep abreast of modern technology because they are in the front line, so to speak.

6. **Method of Approach.** In our Social Laboratory we emphasize the group approach or the institutional approach. We realize that our farmers are small farmers, cultivating a few acres of land. And many of them are even tenant farmers. As individuals they are not credit worthy. They buy things dear and sell things cheap. They are always at the mercy of money lenders and middlemen. As a result, they are in perpetual indebtedness. What is the way out? The answer is that the farmers must be trained, organized, and assisted to the extent that they can do things themselves through their own organizations. Through such organization all government services can be effectively channeled to benefit them all. This will make the government services much easier and simpler. In Taiwan the government has to deal with a little over 300 farmers' associations, instead of 900,000 small individual farmers. A partnership is thus established between the government and the local people through their organizations in program planning and program implementation in the whole field of agricultural and rural development. This accounts for the steady progress of agricultural development in Taiwan.

Now, the Department of Agriculture of West Malaysia is developing this partnership in dead earnest. Since 1967, 71 farmers' associations have been successfully organized in all eleven states in West Malaysia. This is not a slow process. It all depends on the government policy and its determination to carry out the program.

7. Budgets. The general arrangement is for UPCA to provide the regular staff, while SEARCA is to provide normal operational expenses. Anything over and above these will be put on a project basis for which we try to raise funds from outside sources.

At present, PBSP (Philippine Business for Social Progress) has already approved our request for ₱143,955.49 for a period of four years. It is interesting to report that in the Memorandum of Agreement, PBSP has inserted the following statement:

> PBSP sees in the project proposal an opportunity to study a rural social development program using an approach different from that of PBSP-PRRM Rural Prototype and to refine its own rural social development approach in the light of the Social Laboratory experience.

We have also approached the Australian FFHC Committee for assistance for our total rural training program and the construction of a permanent training center in Pila. This training program consists of five training projects: training project for rural school teachers, training project for adult farmers, training project for rural women, training project for older rural youth, and a mass education project. Each training project is under the charge of a professor. Then there will be a professor who will coordinate all these training projects so that they can be integrated and all the teaching staff can work together as a team.

As the Social Laboratory progresses, we will no doubt require additional funds for new projects. One point must be emphasized here, that is, the Social Laboratory upholds the principle of self-help in all its undertakings. Whatever assistance is given to the people is mainly for intellectual investment or motivation that will pay a big dividend in due time.

8. Training and Demonstration. As the name implies, the UPCA/SEARCA Social Laboratory is developed for training and demonstration purposes not only for the Philippines but also for the whole Southeast Asia. By training, we mean that the training is for all the people concerned, including

rural people, field staff, and even our teachers. It cannot be denied that many of our teachers in Asia today were trained in the Western World under Western professors, using their textbooks. As a result, they know more about foreign agriculture than their native agriculture. Because of lack of funds for research and extension they naturally limit themselves to textbook teaching. Now, if there is a social laboratory it will provide an excellent opportunity for them to make explorations for improvement in a given situation. This will make the teaching more practical and substantial.

By demonstration, we mean that in due time our Social Laboratory will evolve a pattern for the government to use for wide application. In this case the Social Laboratory will become a training ground for the government people.

III. What help can the UPCA/SEARCA Social Laboratory give to the SEARCA member countries? Aside from the training of the SEARCA scholars who are now on the campus, the UPCA and SEARCA have already extended assistance to Thailand in the development of a social laboratory in the vicinity of the new campus of Kasetsart University. Similar assistance will be extended to all other member governments on request. We are just too glad to be of any assistance. Because of the early start of our UPCA/SEARCA Social Laboratory we would like to share our experiences with them.

IV. Much development work lies ahead. Although the UPCA/SEARCA Social Laboratory has made much progress and received enthusiastic support from the local people during the past one and a half years of operation, much remains to be done yet. "How to mobilize the human resources," "How to fully develop land and water resources," and "How to transform the present traditional farming into modern commercial agriculture" will require the constant attention and effort of the UPCA/SEARCA. Certainly, we, the field staff will do our utmost. In the meantime, we earnestly hope that you will continue to give us your help and guidance in order to make the whole project a real success.

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